RAILROAD GAZETTE

FRIDAY, NOVEMBER 7.

Contributions.

Automatic Car Couplers.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The adoption of some kind of device for coupling and uncoupling freight cars without danger to employés is now receiving a good deal of attention, not only in Massachusetts (where the matter has been given sudden prominence by the action of its Legislature), but in all parts of the United States.

My attention has been called to it more particularly by the proceedings of a meeting of the New England Railroad Club, held in Boston on Sept. 24, and published in your issue of Oct. 3. This club being a local institution, it may be considered presumptuous of any one at so great a distance indulging in any sort of criticism of its doings, but as the question under discussion is very far-reaching, and furthermore during the debate the whole of the United States and Canada also were contemplated as fairly within the scope of its action, I trust to be pardoned for this brief review of its proceedings.

Before doing this a little space may be devoted to the questions sent out by the club and the answers received, as condensed below:

QUESTIONS.	ANSWERS.
"1. In your judgment would it be advisable or desirable for any railroad to change to an automatic draw bar before a standard is agreed upon by all companies offering cars for interchange?"	1. All consider it anything but advisable or desirable before a standard is agreed upon.
"2. If so what particular construction would you advise?"	2. Only two were prepared to recommend any particular coupler; one Cowell, and one Ames.
3. In your opinion would individual action in the adoption of separate standard automatic couplers and attachments by each road lessen or increase the danger to trainmen?"	3. It would greatly increase the danger to trainmen.
"4. Is it impossible through state legislation to best accomplish the object of a uniform standard coupler for all cars offered for interchange?"	4. While state legislation might exert a good influence, it could hardly hope to accomplish the object the railroads seek, which is a standard, as each individual state could do but little toward settling the whole question.
"5. If not, by what means can this object be best secured?"	5. The best way to accomplish the object sought for would be to appoint a meeting inviting all parties interested in the exchange of cars to be present for the sole purpose of selecting a standard coupler, and that the Master Car-Builders are the proper parties to decide upon the question.

Question 1.—The answers to this question seem to be unanimous, and amount to an indefinite postponement of the matter. We shall reach unanimity about the time we have a standard locomotive, a standard car truck, a standard freight car, a standard rail, etc., etc. It may be easy for any self constituted association, or voluntary gathering of gentlemen, to call some one device a "standard." Securing its general adoption is quite a different and more difficult matter. *It is well that it is so*, for it is safe to predict that the standard of *now* will not be the standard for the next decade, and it is *more* than likely that it *should not* be the standard at any time. While we are vainly groping and waiting for the imaginary standard, *the killed and wounded* who furnish no *list* will continue to increase.

Question 2.—The answers to this question are more restricted, there being but two, one recommending the "Ames" coupler, and one the Cowell. If these were recommendations for use on any particular road, or if the recommendations were confined to New England lines and their connections, any allusion thereto on my part would be impertinent. As the question assumes the nature of universality, I consider myself at liberty to say my say.

We have in this state and extending into Utah a mileage of 1,700 miles upon which the "Ames" coupler would be of no value, and for the following reasons:

1. On 33 per cent. of this mileage, occurring at variable and irregular intervals, it would fail to couple automatically or in any other way with certainty.

2. On a still larger percentage of the mileage it would fail to uncouple when desirable. If this is questioned the truth of it can be ascertained very readily at Boston (the cars with the device are there, as I understand) by putting in a piece of track, on a curve of 24 degrees, radius 240½ ft. That will not only tell the tale as to this device, but will be of great use in testing many other couplers, so that the cost of putting down the track would not be altogether lost.

3. On rough lines and undulating grades there is some liability on the part of the Ames to *uncouple* automatically at inconvenient times. If a way freight train with this coupler attachment should be started out on our Colorado roads, its return might well be examined with curiosity. It would be a sight to behold.

Now I am far from doubting or questioning the value of this device under circumstances favorable to its introduction. It is the policy of setting *it* or *any other* up as a "standard" that is called in question.

As to the "Cowell," I cannot say much, not being familiar with it other than by report and examination of cuts (not the best data upon which to base an opinion). Its value as a "standard" depends largely upon its adaptability to work interchangeably with the multitude of draw-heads now in use, and also with automatic couplers of different devices that may be brought into use.

Question 3.—The sum of the answers to this question must be surprising to many who have given the matter under consideration much thought. It grows probably from the supposition that the adoption of automatic car-couplers may be in its nature revolutionary or sudden. That in my humble opinion is not the direction the business will take. It may be safe to conclude that no road of importance will look with favor upon any automatic coupler that does not work readily with the draw-heads now in use, whether high or low, and that without danger to the operator. As a practical illustration of this we will take the "Best coupler," not because it has any exclusive property in this direction, but, being a home invention, I am quite familiar with it.

Now, in coupling, if the draw-heads (one old and one automatic) are nearly at the same height, the coupling will be made although the brakeman may be at his boarding-house, asleep in his caboose, or laid off for cause. It will do this also with any other automatic coupler which carries a link or a substitute for it.

If the draw-heads are of unequal height, the link can be moved up or down to meet the requirements without going between the cars. Now, is not the element of danger wholly eliminated in this case? Therefore, in the gradual introduction of new devices the answers given to Question 3 are erroneous and misleading.

Question 4.—The answers to this question seem to be too exclusively confined to the *economical* view of the question, *ignoring* the humanitarian side of it, which is the only side approachable by legislation, state or federal.

While legislation can do nothing toward establishing a uniform standard coupler, it can do more than "exert a good influence;" it can say to the railroads that some device shall be used for the coupling of cars that shall neither be dangerous in itself, nor invite danger. The end is within its proper sphere to define; the means will be provided in another more reasonable and more effective way. Since giving thought to this matter I have been satisfied that the desired end could only be reached by such action as that inaugurated by the Legislature of Massachusetts, to be followed without doubt by that of other states and Congress. The best evidence of this is shown by the recent action of the Legislature of Massachusetts in bringing the matter prominently before the country; but for that it might have rested for years, simply for want of an initial point to start from, and this not from indifference or want of feeling for the misfortunes of injured men on the part of railway managers and officials, but from a disposition quite general to "suffer the ills we have, rather than fly to others that we know not of." Hence, pressure is needed from some direction. Where could it originate and command respect but in legislative action?

Question 5.—The answers to this question are in the main proper. By all means discuss, compare notes, appoint meetings and give the world the benefit of a full ventilation of the subject. All this, if properly conducted tests are made, will have due weight and influence.

That the master car-builders are the proper parties to *decide* upon the question will be doubted by many, among whom the writer chooses to be enrolled. No man can hold that useful and intelligent class of men, the master car-builders of the United States, in higher respect than I do, but this question is too important for any class of men. There can be no court of last resort in this matter, and the master car-builders will not be permitted to speak conclusively for the whole country. They have not managed their own household in a manner to warrant it. If they had, the New York, Lake Erie & Western road would not now be carrying 42 different patterns of draw-bars of 31 different lengths, as stated by the President in his opening remarks to the Club.

If it were desirable or possible, which it is not, to leave the decision of the matter to one *class* of men, the yard-masters would be the choice of many. What they don't know about couplers, up to date, as to their economical value as well as safety, could scarcely be supplied elsewhere; as a class they are intelligent, having been promoted to their positions, and they carry about them, in many cases, visible evidence of *closs* acquaintance with the subject.

Having given some attention to the questions propounded by the Club, and the answers given to them, it may be permissible to glance at the discussion had at the meeting of Sept. 24. Before doing this, a few prefatory remarks may be indulged in.

The draw-bars now used will have to go out of use gradually, therefore no automatic coupler can be favorably received unless it carries a link or some similar device, or it must have a place for a link and pin. If the coupler adopted can carry its link or device permanently without sacrificing other important requirements, such as ability to couple with draw-bars now in use higher or lower than itself, so much the better. This coupler, so far as my knowledge goes, has not yet been invented. Links and pins, therefore, cannot be dispensed with during the life of the draw-bars now in use. There are automatic couplers which dispense with the pin, but carry a loose link. The universal desire seems to be a coupler automatic in its action, having no loose parts whatever. If this can be accomplished without sacrifice of other requirements of greater money value than the loss of links or pins, and interchangeability with the numerous draw-bars now in use be obtained, we shall have reached perfection. We are not there yet. The loss of links and pins is a serious item upon all roads. The statistics given at the meeting of Sept. 24 bear evidence on their face of being defective in their bearing upon the subject under discussion.

Mr. Kirby states that on his road during 12 months of 1883-4 the sum of $20,000 was spent for links *and* pins. Mr. Goodwin gives $50,000 as spent on the Lake Shore in 1873. Mr. Adams gives $60,000 for the New York Central five years ago and $24,000 for the Boston & Albany. The expense on the latter road is now reduced to $8,000 or $9,000 per annum. The ordinary link used in draw-bars, automatic or otherwise, *has advantages* which will appear as the discussion proceeds and tests determine. The cost of keeping the link in use or the gain in discarding it would be valuable information to have at hand. The evidence given at this meeting in the way of statistics is so one-sided as to be altogether misleading. We may take the statement of Mr. Adams as to the Boston & Albany road, viz., $24,000 per annum five years ago now reduced to $8,500 per annum. As to the reason of this great reduction, and whether gradual or sudden, we are left in doubt.

No effort is made to separate the cost of links *and* pins. No credit is given for material urned. No distinction seems to be made between links and pins for new equipment and renewals. Mr. Opdike informs us that to the above figures should be added the expense of sending men to pick up the lost and broken. What becomes of the pickings we are not told. Now these figures given by Messrs. Kirby and Adams must certainly require some modification, for at this meeting Mr. Lauder makes the statement that the Old Colony road with its 3,000 cars spends $1,500 annually for links and pins, or 50 cents per car, which agrees pretty well with our trans-Missouri experience.

As we now have, thanks to Mr. Lauder, some reasonable figures to start from, we can form an idea of the cost of retaining the *link* to the Old Colony Railroad. It will not be far out of the way to call the pin one-third the cost of both link and pin, which would bring the annual cost down to $1,000. We can assume that one-half of the material, viz., dropped and broken links, is picked up and returned and valued at 1 cent per pound or $360 per annum, so that the expense of retaining the link would at $700 per annum, which capitalized at 8 per cent. = $8,750. In changing the equipment of this road from common draw-bars to automatic, 6,000 couplers would be required. Hence the above capitalized amount would represent what the road could afford to pay for draw-heads *without* a link, both being automatic and all other things being equal, viz., $1.46 per draw-bar. Now I don't pretend to say that the retention of the common link is of the value of one single dollar to the Old Colony, the Boston & Albany, the Lake Shore or any other road represented at the meeting of the Club. But there are roads in this broad land which cannot as yet dispense with it within the limits of any reasonable economy, if at all, let their coupler be automatic or otherwise. I have touched this subject for the reason that the only objection to the link, so far as known, is the matter of cost, which has been grossly exaggerated.

Having already taken up more space in reviewing the doings of the Boston Railroad Club than I fear will be allotted to me by the *Gazette*, I will end by expressing my belief that the seeking for a *Standard* automatic coupler that shall be universal in the country in the manner proposed by the Club will prove a chimera. Several couplers will come in use, and the end of the lane will see the "survival of the fittest;" that the lane may be shortened and made easier by discussion and investigation is quite possible.

While upon this subject, I would like to give my views as to the requirements of a car-coupler at this present time.

1. That it shall infallibly couple automatically with its own kind under the most disadvantageous circumstances, whether on a 30° curve or straight track, without reference to *condition* of track or height of draw-bar.

2. That it shall remain coupled without any failure and under all circumstances short of destruction of its parts, caused by derailment or other unforeseen accidents.

3. That it shall couple readily with all draw-bars now in use without reference to their height above the rail or the use of crooked links.

4. That it shall couple readily with all other automatic devices already invented or that may be invented in the future.

5. That it shall be so protected as to be impervious to snow, ice, gravel, etc., likely to interfere with its working.

6. That it shall uncouple readily when necessary, whether on straight line or curved track.

7. That all the manipulation shall be done with greater facility outside the car than elsewhere, and that the brakeman in going between the cars shall be at a disadvantage in doing his work.

8. That the automatic draw-bar shall not greatly, if at all, exceed in cost some of the common draw-bars now in use.

9. That it shall be of easy application to the frames of cars now in existence.

10. That its construction provides in an ample manner for the lateral play of cars in motion.

Now, the coupler that meets all these requirements is the

one whose tenure of existence will be the longest, and will probably be seen at the end of the lane heretofore mentioned, and that without reference to link or no link.

DENVER, Col., Oct. 10, 1884. JAS. A. EVANS, C. E.

Automatic Drawbridge Signals.

STEELTON, Pa., Nov. 3, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the summary of "September Accidents" in the *Railroad Gazette* of Oct. 31, speaking of two accidents resulting from open drawbridges, you say, "In one of these cases the bridge was supplied with interlocking signals of the most approved kind, and the only possible explanation appears to be that the engineer failed to see them." * * This appears to be an erroneous statement, as with interlocking signals of the most approved kind the result of a failure of the engineer to see the signals would be a derailment of the train at a distance to render it impossible for the train to get into the draw. Your "Record of Train Accidents" says the bridge on the New York, West Shore & Buffalo Railway, near Iona Island, "was provided with automatic signals and could not be opened without setting the signal," and the fact that engine, tender and six cars went down into the creek proves that the signals could not have been "of the most approved kind." Last July there occurred at the Cos Cob drawbridge on the New York, New Haven & Hartford Railroad, soon after the completion of the Cummings patent interlocking signal apparatus there, applied by the Pennsylvania Steel Co., a test in a similar case of failure to regard the signal, and since that time the railroad company has contracted for the application of the signals to three other drawbridges between New Haven and New York.

The drawbridge at Cos Cob has cautionary semaphore or "distant signals" about half a mile from the draw, and a stop semaphore, or "home signal" about 1,200 ft. from the draw. Before the draw can be unlocked (for opening), these signals must be set for "danger," and a derailing switch in the track unlocked and opened, so that a train proceeding to pass the "home signal" at "danger" must of necessity be derailed at a safe distance from the draw. The mechanism for operating the signal, etc., is on the draw, and until the draw is closed and properly locked it is impossible to cause the signals to indicate "safety," or to replace the derailing switch.

Any automatic arrangement of *signals only* is not to be relied upon for securing safety of trains, at such dangerous places as draw-bridges, but we must make it physically impossible to plunge a train into an open draw.

GEO. W. PARSONS.

Maps of Preliminary Surveys.

ATLANTA, Ga., Oct. 26, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

An engineer has run a preliminary line through a moderately rough country, and has submitted a map and profile of the line to the President of the company.

Several towns are passed, but none of them are located on the map. No angle (*number of degrees*), is marked on it. No tangent has its course marked on it. There is no road on it. The country is hilly and a mountain range is crossed, but there is no contour line on the map, and no shading of any kind to indicate a hill or mountain.

I hope you will answer through your paper the following questions:

1st. What is your opinion of such a map?

2d. On what scale should a map of a preliminary be made to be of service in locating a line through a rough country?

DIRECTOR.

[It should hardly be necessary to say that such a map as described, although it belongs to a class which is far too common, cannot properly be called a map at all, and reflects little credit upon the engineer who made it. The proper scale for maps varies so greatly with the country that no fixed rule can be laid down, but it should be never less than 400 ft. to an inch if the map is to be used, and in rough regions may well be larger, up to even 100 ft. per inch. As a rule, too small scales are used by engineers, owing partly no doubt to the awkward custom of many engineers of making working maps upon rolls, instead of upon loose sheets, about 20×24 in. in size, matched by penciled X's, which latter is by far the simplest and best way. The scale can then be varied as the country varies, with little trouble.

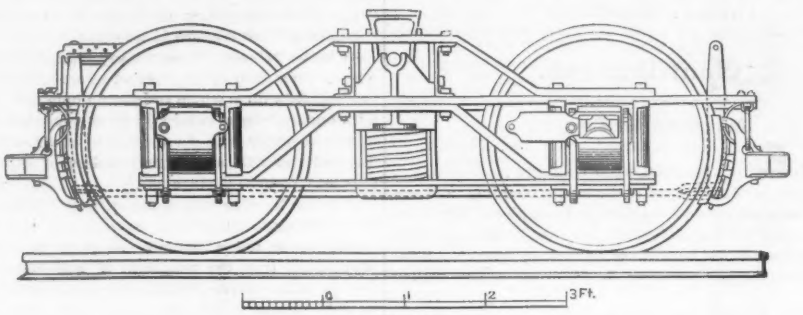
It is well, however, always to carry along with such maps a smaller scale map, say to one-fifth or one-tenth the scale, to give a general idea of the line as whole; but such a map with the neighboring towns left off is like the play of "Hamlet" with Hamlet omitted. The chances are strong that it would be well, first to locate the towns upon the map referred to, and then to swing the line over to them.—EDITOR RAILROAD GAZETTE].

Engineers' Club of Philadelphia.

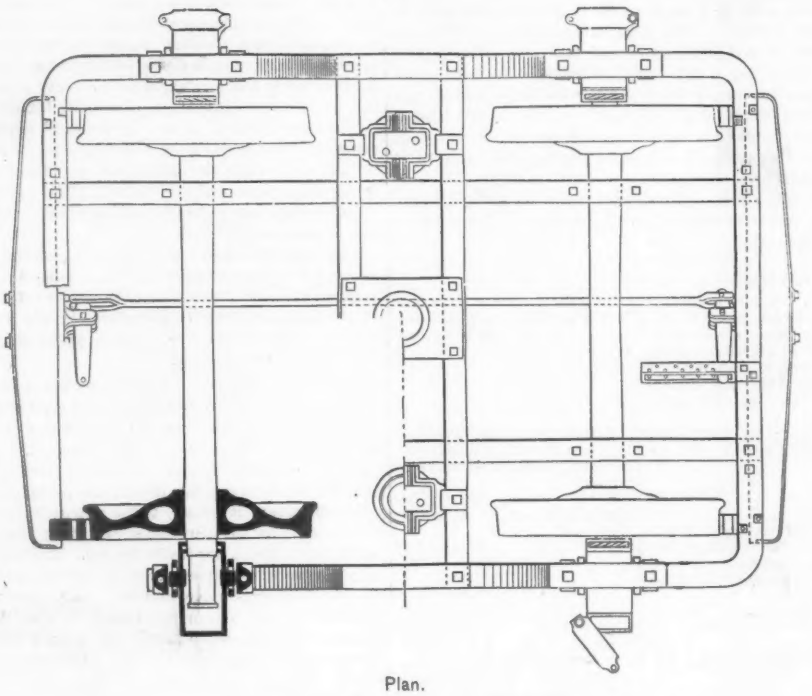
At the regular meeting of Oct. 18, President Wm. Ludlow in the chair, there were 25 members and 3 visitors present.

Mr. C. Henry Roney showed a portable storage battery for mining and exploring purposes, with small incandescent lamps, illustrating his remarks with blackboard sketches. The battery shown was a modification of Planté's, devised by Dr. E. T. Starr, of Philadelphia, the electrodes consisting of V-shaped plates of sheet lead arranged over each other, the convexity downwards, with a slight interval between them, their ends attached to a lead frame by burned joints, the interstices between the plates being filled with finely divided metallic lead, exposing a large surface to oxidation and reduction when subjected to dynamic electric or voltaic energy, and, in turn, giving off a large percentage of the "stored" energy to incandescent lamps placed in the circuit. The battery shown measured 3¼ in. long, 2⅝ in. high, and 3⅝ in. thick, and would maintain a small 2-candle incandescent lamp at incandescence for about one hour. A battery sufficently large to run an 8-candle lamp for 10 or 12 hours would not be too large or heavy to carry conveniently for mine or other underground exploration.

Mr. Wm. L. Simpson exhibited and described the Thompson Indicator. He considers it handsome in design, and convenient and simple in arrangement. Cards can be taken with it at as high a pressure as 500 lbs. per square inch. All the moving parts are made very light and strong, which is a consideration of much importance in an indicator, especially when used on engines traveling at a high rate of piston speed. The coiled spring within the paper cylinder, for increasing or decreasing the tension for different speeds of engines, is so arranged that as little or much of it can be taken up as may be desired. This is quite an improvement, as, formerly, a whole coil of the spring had to be taken up or none at all. By means of a jam-nut the horn handle screw can be set so as to regulate the pressure of the pencil on the paper, the back of the screw touching against a small post, and thus avoiding any strain tending to throw the parts out of line through too much pressure. To exchange springs is very easy, it only being necessary to unscrew the milled nut at the top of the steam cylinder, take out the piston with its arm and connections, disconnect the lever and piston by unscrewing the small knurled-headed screw which connects them, when the spring can be removed from the piston and the desired one substituted. All springs made for this indicator are scaled, providing for 30 in. vacuum; and the capacity of any spring can be ascertained by a simple rule. To adapt the Thompson indicators to all pressures, springs can be made to any desired scale. The following are the most generally used: 8, 10, 12, 16, 20, 24, 30, 32, 40, 48, 50, 56, 60, 64, 80, 100. For pressures from 65 to 85 lbs. a 40-lb. spring is best adapted, for as 40 lbs. pressure on a 40-lb. spring will raise pencil 1 in., 85 lbs. pressure on the same spring will raise pencil about 2 in., which is the usual height of a diagram. By means of the "detent motion," consisting of a pawl and spring stop, the paper cylinder can be stopped and the card taken off without unhooking the connecting cord. An arrangement of a swivel carrying a scored wheel allows the connecting cord to be run at any angle, so that it is possible to connect with any motion, of whatever kind, wherever it may be.



Side Elevation.

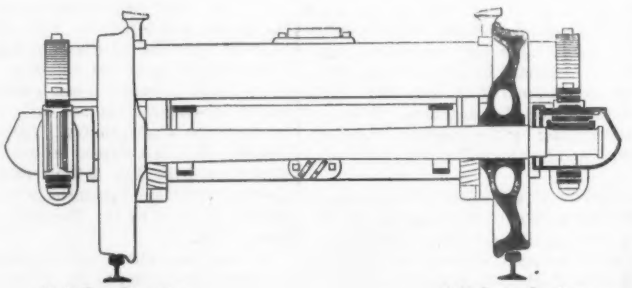


Plan.

CONTINUOUS FRAME CAR TRUCK.

Mr. J. J. de Kinder described the repairs to the 36-in. Belmont submerged main, Philadelphia, recently made by him. The specially novel feature of this undertaking was a floating cofferdam, the bottom of which was built around the main and the whole structure kept in exact balance during freshets, etc., by two water-tight scows, suspended on its sides, into or out of which water was pumped to regulate the weight. The rock lay so near the river bottom as to render a sheet-pile structure impossible.

W. Bugbee Smith introduced the subject of the Fire Protection of Mills. Mills must be properly built and furnished with adequate fire-extinguishing apparatus. The best construction has been found to consist of heavy wooden posts and girders, solid plank floors and roof. The usual fire extinguishing apparatus consists of water buckets, hydrants and hose. In addition to this, some mills are furnished with perforated sprinkler pipes, running lengthwise through the mill, perforated with holes 0.1 in. diameter and about 9 in. apart. In case of a fire, by opening a valve, outside of the building, water is let into the pipes and on the fire. The objection to this system is the fact that the water is not confined to the spot where the fire occurs, but is distributed over such a large area that much damage is done by it. It also requires human agency to make it effective. To overcome these objections automatic sprinklers have been invented. These are valves, placed on a system of pipes near the ceiling and opened by the heat of the fire. They are kept closed by means of a fusible solder which melts at about 166° Fahr. The heat rising from a fire melts the solder joints of the sprinkler immediately over it, and thus the water is put just where it is needed. There are two general classes of automatic sprinklers, the sealed, such as the Parmelee, Burritt, Rose and Bishop; and the sensitive,



Half End Elevation. Half Cross Section.

CONTINUOUS FRAME CAR TRUCK.

such as the Grinnell, Burritt, Brown & Hall, and the Kane. After describing the methods of piping a mill for each of the classes, samples of the above mentioned sprinklers were exhibited and their peculiarities explained. The automatic sprinklers have been in use about 12 years, and recent tests show that the fusible solder has not lost its strength and sensitiveness in that length of time, though exposed to pressure and water hammer. The effectiveness of automatic sprinklers as fire extinguishers is shown by the fact, that out of 110 fires originating under them and of which the damage is known, for 67, or 60.9 per cent. of the whole number, no damage was claimed; for 12, or 10.9 per cent., the damage was less than $250; for 8, or 7.2 per cent., between $250 and $500; for 11 or 9.9 per cent., between $500 and $1000; for 12, or 10.9 per cent., between $1000 and $20,000.

The Secretary exhibited, for Mr. S. L Smedley, a photo-lithographic reproduction of a topographical map of Philadelphia, by John Hills, 1796, and pointed out some of the remarkable evidences of its great accuracy in detail.

Mr. Francis Lightfoot, of West Chester, introduced by the Secretary, explained a model of a rail-joint in which no plates or loose pieces are required, the ends of the rail being lapped and bolted together through oblong slots.

Continuous Frame Car Truck.

The above illustrations represent a freight car truck extensively used on the Boston & Albany Railroad. The dimensions of each of the parts and their cost is given in the table below.

LIST OF MATERIAL FOR TWO TRUCKS.

Castings.

8 oil boxes, 628 lbs.
8 wedges, 56 lbs.
8 brasses, 80 lbs.
8 oil box covers, 12 lbs.
2 centre plates, 68 lbs.
8 brake hanger boxes, 20 lbs.
8 brake shoes, 138 lbs.
8 brake heads, 133 lbs.
8 washers, 4 lbs.
4 spring seats, 128 lbs.
16 side columns, 256 lbs.
8 suspension link casting (under box), 76 lbs.
4 body side bearings, 180 lbs.
4 truck side bearings, 316 lbs.
4 brake lever fulcrums, 48 lbs.
Total, 2142 lbs., at 2½ cts., $53.55.

Miscellaneous.

4 axles, finish length 6 ft. 11¼ in., 1,368 lbs., $44 46.
8 cast-iron wheels, 33 in, 4,028 lbs., $80.
4 channel irons, ⅝ × 8 × 6¾ in., 420 lbs., $14.70.
64 ⅝-in. nuts, 25$\frac{8}{10}$ lbs.; 52 ⅝-in. nuts, 12$\frac{1}{10}$ lbs.; 32 1-in. nuts, 31$\frac{4}{10}$ lbs., at 3c., $2 08.
4 springs, 8 × 9 in., $18.
8 safety chains, ⅝, 12 lbs., 65c.

Lumber.

4 brake beams, 3⅜ × 6¾ in. × 5 ft. 6 in. 28 lbs.
8 back linings, 6 × 9 × ⅞ in., 4½ lbs., total, 32½ lbs., at 2½c., 81c.
Total, $214.25.

Forgings.

4 arch bars, 1⅛ in. × 3¼ in. × 7 ft., 336 lbs.
4 arch bars, 1⅛ in. × 3⅛ in. × 6 ft. 2 in., 296 lbs.
2 frames, 1⅛ in. × 3¼ in. × 29 ft. 6 in., 708 lbs.
8 safety straps, 68 lbs.
2 brake levers, 24 lbs.
2 dead levers, 24 lbs.
2 brake connection rods, 30 lbs.
8 brake shoe keys, 9 lbs.
8 brake hangers, 39 lbs.
8 brake hanger box staples, 8 lbs.
8 springs for brake, 28 lbs.
16 suspension box links, 144 lbs.
4 safety irons. 3 in. × 3¼ in. × 8 ft. 9 in., 266 lbs.
2 dead lever guides, 30 lbs.
4 spring straps, 3¼ in. × 3½ in. × 5 ft., 168 lbs.
4 side bearing hangers, 2 in. × 2 ft. 1 in. rd., 68 lbs.
Total weight, 2,246 lbs., at 3½c., $78.61.

Bolts.

8 brake head, ⅝ in. × 5¼ in., 5$\frac{1}{10}$ lbs.
8 brake spring, ⅝ in. × 3 in., 3$\frac{4}{10}$ lbs.
16 side column, 1 in. × 16 in., 62$\frac{6}{10}$ lbs.
8 top arch and channel bar, ¾ in. × 3 in., 4$\frac{8}{10}$ lbs.
8 channel bar frame, ¾ in. × 4 in., 5$\frac{2}{10}$ lbs.
8 brake lever fulcrum, ⅝ in. × 9 in., 7$\frac{6}{10}$ lbs.
16 safety straps, ¾ in. × 3½ in., 10$\frac{4}{10}$ lbs.
4 dead lever guide, ⅝ in. × 3 in., 1$\frac{7}{10}$ lbs.
8 spring strap, ⅝ in. × 3 in., 3$\frac{4}{10}$ lbs.
8 spring strap, ⅝ in. × 2 in., 2$\frac{7}{10}$ lbs.
8 box cover, ¾ in. × 3 in., 4$\frac{8}{10}$ lbs.
16 safety iron, ¾ in. × 3 in., 9$\frac{8}{10}$ lbs.
8 centre plate, ¾ in. × 3 in., 4$\frac{6}{10}$ lbs.
8 brake lever, ⅝ in. × 4 in., 4 lbs.
Total, 131$\frac{2}{10}$ lbs., at 3c., $3.93.
Labor setting up and drilling, $8.30.
Total cost, $305.09.

Vertical Gang Boring Machine.

This machine, as its name implies, is a series of boring machines mounted on one frame, each being a boring bar independent in all of its adjustments, and each driven by its own belt; yet, in the aggregate, they form one union, or, in other words, a vertical gang boring machine. It can be worked by one operator, who, by its aid, can bore six, or eight, or more holes of different diameters placed either in a straight line or staggered, and the same or odd distances apart, without shifting the piece being bored.

This machine was principally designed for car and other factories, where material has to be worked in large quantities, and at the smallest possible expense of time and labor.

The frame of the machine is heavy and well braced, and carries a long slide running clear across the top of the machine (at the same time forming a brace) upon which are mounted all the housings.

Each housing has an independent adjustment of some 10 in. across the table, by means of a screw, and holes can be bored at any point. Each housing has also a longitudinal movement across the machine by means of a rack and pinion. The means which give these longitudinal and cross adjustments of the spindles cannot be seen in the engraving.

The table is supported upon heavy brackets, and is moved longitudinally by means of a rack and pinion, operated by a hand wheel. It is provided with the necessary clamps, etc.

The feed is automatic in its action; it is only necessary to touch a lever, when the proper frictions are brought into play, and the table is fed upward upon heavy screws its proper distance, automatically gauges and bores the holes their proper depth, then returns by a quick return motion to its normal position, and stops ready for the next piece.

The feed is positive; friction, being quieter, is used instead of gearing, which would be liable to break, as the feed is reversed at every movement of the table. The feed can be started by either of the two foot levers or two hand levers shown. The operator can thus set the feed in motion from either end of the table, giving him a very convenient choice of positions.

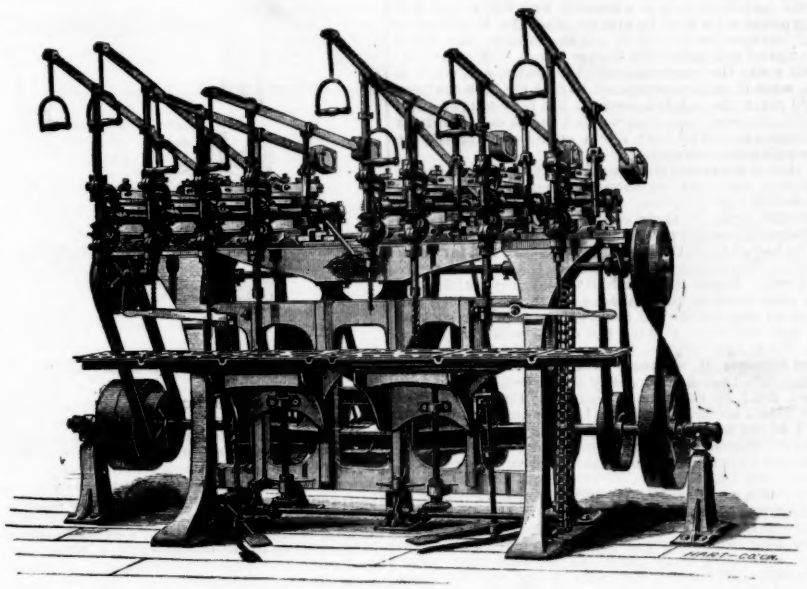
The spindles all bore simultaneously when the table is fed upwards, or any number can be thrown out of gear if desired. The spindles can also be set at different heights and remain so, when they will produce holes of different depths. If the holes are too close together to be worked all at once, the table can be moved lengthwise by a slight movement of the hand wheel prepared for the purpose, and such holes can be worked afterward by using the hand levers with which each mandrel is provided, bringing any mandrel into play singly. This is found of value with heavy car sills or other cumbersome timbers, which can thus be finished before they are removed from the table.

All slides and wearing parts are provided with gibs to take up the wear, and all revolving parts are properly balanced.

As usually built the machine will bore holes at any point or distance apart, not to exceed 8 ft., but upon special order it is made to bore to longer dimensions. Timbers of any length can be worked, and any width, not to exceed 20 in., but the spindles will adjust across 10 in. only.

The machine can be furnished with any number of spindles, as almost every branch of business wants or requires different numbers. The machine most generally supplied to car-builders has 6 spindles and weighs about 2,000 lbs.

The machine is manufactured by Messrs. Bantel, Margedant & Co., Hamilton, Ohio, who can furnish any further information regarding it.



VERTICAL GANG BORING MACHINE.

The Painting of Passenger Cars—Light vs. Dark Colors.

[Paper read by Mr. R. McKeon, of the New York, Pennsylvania & Ohio road, at the annual meeting of the Master Car-Painters' Association, in Boston.]

The manufacture of railway cars is a great and growing industry, and as the increase in mileage goes on the demand becomes greater. We therefore see the importance that attaches to passenger car building, as well as to the general repairs of all classes of cars in our railway shops, and which requires that each department of the work be placed under the supervision of practical men who have acquired a knowledge of their trade in the car shop, and are well acquainted with all the details of the construction and finish of cars. Each of the several departments calls for mechanical ability and good management on the part of those in charge, so that a system of working may be followed that shall produce the best results with the least expense.

The painting of railway cars is progressive, and to-day commands equal attention with the other departments whose duty it is to care for the rolling stock of the road, and progress is expected to be made by those who are intrusted with the supervision of the paint shop. We are not merely to follow in the wake of those who may have gained some little notoriety for their success in work and management, but we should reach out in search of improvement, our aim being to make some progress in the art. The painting of a first-class passenger car is of more importance than many of our railway officials may at first thought imagine; at least it would seem to be so from the fact that it is frequently the case that the time taken to paint a car is considered as so much loss of service of the car to the company, when a little investigation would convince them of the necessity of proper time being allowed to do the painting, which, when done, would be alike creditable to the road and to the shop.

Cars are painted not only to add to their beauty and attraction—two important points in painting—but are painted for their preservation. The appearance of a car plays a very important part in the traffic of a road. Many of our Western lines have built up their reputation on the interior finish and decoration of their cars, as well as in the good taste shown on the outside painting; for let a car be devoid of beauty and faulty in design, or bad taste be exhibited in its finish, and it is not suitable for the place it was intended to fill. It is, therefore, a wise policy for railway companies to show a reasonable amount of pride, and the paint-shop is one of the places in which to study out the tastes of the traveler, and to blend together in harmony the colors and designs which will please the eye and command the approval and the patronage of the public. But how shall we economize in car painting? That is a very important question, and, in fact, is the leading question of the day, not alone in the paint-shop, but in all other departments engaged in the building and repairs of cars, and it will be our object at this time to show the management of our roads how to save expense on the passenger-car painting by referring them to practical tests, together with an experience of one-third of a century in the railway paint-shop.

During the past 15 years a considerable reduction has been made in the cost of painting, and the credit we think is in a large measure due to the labors of the Master Car-Painters' Association, who will continue their efforts to further reduce the cost of work and to show where economy may be introduced without detracting from the wearing qualities or the durability of the painting. The color of passenger cars for some years has been hard to decide. No fixed standard has given entire satisfaction, and numerous changes have been made. I know of roads that have had four different standards of color in the past 12 years, but they were all of a dark shade. The consequence is that very few roads have their cars all of a color, which does not show very good taste, and certainly not good judgment on the part of those who had the power to make the changes. Therefore we think that a uniform standard of color on all passenger-train cars of a road would be the most important step ever taken towards economy. I am decidedly in favor of light shades of color for passenger cars. A long experience in their use has convinced me that it is economy to use white lead for a finish. It is true that dark colors have been popular of late years, so much so that many hesitate to advocate what they know to be the best for wear, but we should not be tied down to any standard of color or method of working when we are convinced that it is not producing good results. We must seek for something better, embracing every opportunity to add to our knowledge of the pigments employed, for unless we exhibit such an interest in our labors we are not fulfilling the entire duty we owe to those who employ us. There are too many men who fail to advocate economy and who follow the method that is indorsed by some leading road or shop, in place of showing in their work by practical facts what benefits would be gained by making a change in the methods employed and, instead of adopting a standard of color at the simple suggestion of some road official, first take into consideration the value of such color, its adaptability to the work and whether it would be for the interest of the road to adopt it, when a plain statement might be made setting forth your objections to the pigment or color proposed to be used.

The painting is about one-twelfth the cost of a first-class day coach, which includes labor and stock, and must be renewed from time to time; and being a protection to all other parts of the work, it must be watched carefully and treated at the proper time, or we not only destroy the painting and the decoration, but neglect will ruin the entire finish. Twenty-five years ago, and later, most of the passenger train cars of our principal roads were painted a light color—yellows of different shades being generally used. White lead was the foundation and the finish of the car, and lead in those days was manufactured honestly; it was not thrown on the market half corroded and poorly ground in cheap adulterated oils, as we find it to-day in many places (although I am glad to learn, from those more fortunate than myself, that a few reliable manufacturers still exist). But a change came in the color of cars, and changes are not always beneficial; competition brought out new colors, anything for attraction, and a ground work was introduced for the sole object of setting off the decoration on the outside of the car to greater advantage. Economy was not thought of; it was a matter of less importance in those days than now; but a change was made from the straw colors to the umbers or darker shades, which involved an expense of one-third more in the first cost of painting, while the life and service of the car was one-third less than it had been with the light colors.

We do not attribute all the saving in expense to the use of light colors, but just as soon as a change is made from a lead finish to any of the popular shades, such as umber brown, chocolate, Pullman color, olive and Quaker green, Tuscan red, or, in fact, any color where no lead enters into the mixture, then we lose at once the wearing quality, for it is the exposed surface of a paint that tells. This is the protection to the entire body, and a lead foundation will not help the finishing color if composed of the pigments we have named,

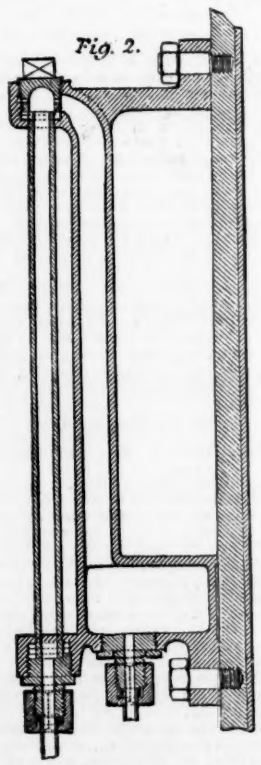
but carry the lead all through and we have a durable surface, we have a car painted that will pay for the labor expended on it, and we wish the companies we represent here to-day might be convinced of the facts of our argument in favor of straw color on their passenger cars, which is the first step toward economy in the painting department of their road. We can show them that this is where a great saving might be made, and with more care in the purchase of paint stock, we can assure them that they would have more cheerful and attractive cars in place of the dingy, dull and lifeless ones which now confront the traveler in many of our railway depots, and the varnish on such colors would also retain a lustre much longer and do better service by having the lead finish for a foundation.

While speaking of the superiority of a pure white lead over all other pigments, I would state that no other pigment bears more oil; it is of itself an oily nature; therefore pure linseed oil combines with it better than with any of the vegetable or earth pigments. No one will dispute the fact so well known to all painters, that a lead pigment is more durable and forms a denser coating than any other employed in the paint-shop. A solid body, and one that has depth to it, is the main object in a paint; this guarantees durability. A coat of Tuscan red may have coloring-matter sufficient to cover the work, but that is simply a stain; there is no wear in it; but lead gives a solid foundation, and will hold out the varnish well on its surface. Being less porous or spongy than other pigments, it acts as a protector, for varnish does not decay altogether on the exposed surface, the absorption under it which takes place in all vegetable and earth paints, as well as in chemical productions more than in lead, draws the oil as much perhaps as light and air does on the surface.

Heat is the great enemy of paint, and such colors as are in general use on passenger cars draw the sun's heat, which burns the oil and the life out of the varnish and paint. By repeated tests of light and dark colors, we find that white presents the coolest surface in a hot sun, and black the hottest. A gradual scale may be run up, and the heat-absorbing power increases as the colors become darker, the effect being to expand and soften the darker colors. A continual heat would make the paint and varnish elastic, and while in this state, were it suddenly exposed to cold air, the contraction would crack the painted surface; but take a light color and put it to the same test, and we find that it does not draw near the same amount of heat, nor a sufficient quantity to soften the paint and varnish.

I know that it is argued that our railway managers prefer the colors they use, and we should, therefore, try to make them as durable as possible. We would not for a moment deny them the right to their choice of color, and we have always labored to secure the best results, but the experience many of us have had with such fugitive colors are far from satisfactory. We can say for light color that it has less absorbing power, hence its durability and less liability to injury by solar heat, as dark shades, or the reds which are so common on coaches the last few years, and which suck in the heat and moisture, making but feeble resistance to the attack of storm and cinders, having no solid body to resist the sudden changes of weather. Why, then, persist in the use of pigments that are so easily destroyed, or rendered lifeless and dead by constant exposure? But I am aware that some claim the heat theory to be only imaginary, and therefore I do not advance these arguments in favor of light colors simply from my own experince, but I have the practical views and experience of car-painters in various parts of the country, and the large majority tell me that the life of a dark color on a car, particularly in the Southern States, is less than half what a buff or straw color is. The dark color in one case referred to is of an olive shade, which I am informed the heat soon changes to a deep black olive, and frequently the dark cars have to be repainted after only 12 months of service, the paint being too far gone to revarnish, while the buff colored cars run from 18 months to two years, and then clean up well and are revarnished.

Fig. 2.



Stroudley's Speed Indicator—Details of Indicator, etc.

What shades of color suitable for cars will resist the deadening effects of solar heat the best? We have the various shades of straw, lemon, cream, deep gold, old gold and buff. Many shades may be made between a pure white and an orange, in all of which white lead predominates, and the best brands of chrome yellow and yellow-ocher with venetian red. No shade of color should have the strong yellow cast that we have seen on some roads; it should always be toned down, which enriches it. These colors will outwear any of the dark colors or reds now in use fully one-half, or in other words, a car painted yellow will do good service, when first painted, for 18 months before requiring to be revarnished, while the dark or red colors will last but 12 months at the most.

Light colors retain the oil a greater length of time; and that dark colors absorb and retain heat has been proved by numerous tests. If lampblack and white lead be placed side by side, the absorbing power of the black is 100, while that of the lead is only 53, the reflecting power of the lead being 47. Cloth of different colors placed on newly fallen snow also shows that the white is the last to melt the snow.

In mixing car colors of a light shade, or straw colors, we find that a pure white lead is first necessary, which should be tinted with the best French ochre and English chrome yellow. This will make the most durable color for car bodies; the chrome is permanent when mixed with lead, almost as much so as the best ochres, but it is far superior in body and covering properties, and one of the most useful pigments in the paint shop. White lead alone will change from its original whiteness in case it is mixed with a surplus of oil; it is the oil which changes it to a yellow cast as it hardens in drying; but when lead is mixed with some other strong pigment, its color when thus tinted is more permanent, and its density and wearing qualities are increased. The durability of a color we do not claim to be altogether in the pigment employed, but it is equally so in the vehicles used in its preparation for use; therefore lead, which is known to retain oil the best, will hold the color longer.

Painting is put to the severest test on our passenger cars,

Fig. 1.

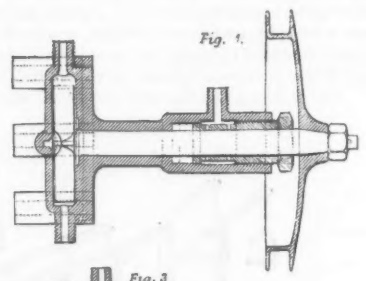


Fig. 3

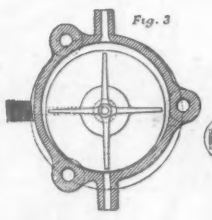
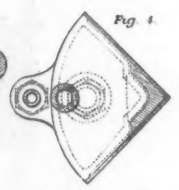


Fig. 4.



Stroudley's Speed Indicator—Details of Pump.

and its destruction is caused by a constant exposure to the elements and the changes of atmosphere, from a dry, burning heat through the day to a heavy moisture at night, which the painted surface absorbs in large quantities, to be dried out again, the same process going on day after day. But perhaps it is, as I have heard expressed by members, that the foreman painter is not consulted in regard to the color of the car. This is generally decided by those who know nothing of the adaptability of a paint to the work. Freaks of fancy have too often determined what the color of the car should be, with no thought given or questions asked of those who are expected to know the difference in the lasting qualities of a color, nor is the question considered whether a color would wear six or twelve months. Would it not, therefore, be economy to ascertain what amount of wear is in a color before it is finally adopted as the standard of the road?

Our arguments in favor of the light colors probably will not change the views of the officers of our roads. They may, however, find the matter worthy of their attention, and, to test it for themselves have one coach painted any light shade, and put it in service along with a car painted Pullman color or Tuscan red, when 12 months' service will prove what I have already asserted, that light colors are the first step toward economy in the car-painting department of a road.

Stroudley's Speed Indicator.

The readings of the speed indicator, designed by Mr. W. Stroudley, the Locomotive Superintendent of the London, Brighton & South Coast Railway, and which we illustrate herewith, are obtained by a column of water maintained, in opposition to the action of gravity, by a rotating paddle-wheel driven from the shaft whose velocity it is desired to demonstrate. When applied to a stationary or a marine engine the scale is marked in revolutions per minute, and when applied to a locomotive, in miles per hour. The apparatus consists of a gauge glass, figs. 2 and 5, fixed in a suitable position, as on the weather board or in the corner of the cab of a locomotive, or on the bridge of a steam vessel, and standing immediately in front of a scale, which can be slidden up or down to adjust its zero point to the head of the fluid column when the machine is at rest. From the bottom of the gauge glass a pipe descends to the periphery of the pump case, figs. 1 and 3, and serves to convey the fluid driven off by the paddles to the gauge. The suction pipe extends from the centre of the pump to the bottom of a reservoir, figs. 2 and 5, placed immediately behind the gauge glass, the levels of the water in the reservoir and gauge glass being the same when the engine is at rest, and falling in the former and rising in the latter when the pump gets into action. The pump (figs. 1 and 3) consists of a short cylinder of small diameter in which there rotates a paddle wheel. This is slightly eccentric to the cylinder, and is fixed on a spindle, which passes through a stuffing-box, packed with carefully turned leather washers, held up with a lantern gland. The outer end of the spindle carries a double-flanged pulley, by which the apparatus is driven by aid of a strap from one of the axles (fig. 5). The size of the pulley is determined by the diameter of the axle, so as to give for each speed a certain number of revolutions, which have been already ascertained experimentally.

In fixing these indicators to a locomotive, two points have to be carefully observed in order to obtain correct and trustworthy results. The leather band must be shielded from the heat of the ash-pan, and from the droppings from a leaky pipe or boiler seam. The pipes from the pump to the graduated glass, fig. 2, must also be without any downward dip, in which air can accumulate. If these precautions are not observed the indicator will not work satisfactorily.

These indicators are in use on many English and Colonial roads, and we understand are found very useful and convenient in determining the speed of trains. When Capt. Douglas Galton was carrying out his brake experiments on the Brighton line he compared the readings of the Stroudley and the Westinghouse indicators, and found that they were nearly identical, while the simplicity of the former was a strong recommendation for the purpose it was designed to fulfill. Any further information may be obtained of Messrs. Taite & Carlton, London, England.

THE SCRAP HEAP.

Racing Trains.

Nearly every day passenger trains going east and west on the West Shore and the Central afford passengers the excitement of trials of speed. Every one on board the trains enters into the spirit of the occasion, and the enthusiasm of those on board the leading train is expressed by a fluttering of pocket linen from the coach windows. One day, recently, train No. 77 on the West Shore and the Chicago flyer, No. 1, on the Central, engaged in a spurt of speed for a distance of seven miles, that was said by people on board of both trains to have been the most interesting race of railway trains they had ever enjoyed. The West Shore train was crossing the big fill through the salt yards when the Central flyer pulled up alongside going west, the two roads being several rods apart at that point. The flyer had the advantage and quickly left No. 77's nine cars behind. After taking the level west of the Central freight tracks, Engineer Brown, who was drawing the West Shore train, opened the throttle and quickly breasted his flying competitor. For three or four miles the excitement was most intense, and the sight of the spinning driving wheels under the Central engine, which presented most perfect proportions and a clean, shining surface of polished steel, with bands of gold, and areas of red was a magnificent one. In point of speed even Central engineers give the palm to the West Shore engines, which, with the exception of a few of the Central's largest locomotives, have the advantage of larger driving wheels.—*Syracuse (N. Y.) Standard.*

Prizes for Excellence of Track.

The inspection of the track of the New York Central & Hudson River road has resulted in the award of the prize of $50 for the best section to Road-master J. Bennett, whose division extends from Rochester to Lyons on the main line and from Rochester to Auburn on the Auburn Branch.

On the Boston & Albany road the two prizes of $50 for the best line and surface of track and of $50 for the best condition of frogs, switches, etc., have both been awarded to the same road-master, Mr. Geo. Prentice, who has charge of the Westfield section.

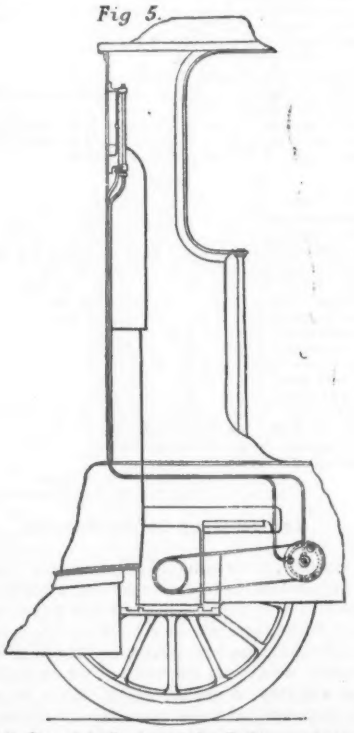
When to Whoop Her Up.

Speaking of railroads, that was a capital order which the General Manager gave recently to the conductor who had a distinguished party in charge. "Remember," said he, "that you are a special and have the right of way. During the night run 18 miles an hour, so that we can sleep; during meals run 10 miles an hour so that we can eat; during the rest of the time whoop her up!"—*Washington Capital.*

A Long Day's Run.

A Central Railroad passenger train made the trip from Atlanta to Macon yesterday morning in 2 hours and 50 minutes. The train was heavily loaded with passengers and their rapid transit from the Central city to the Gate city was the talk among railroad men in Atlanta yesterday. The train is known as No. 63 and is scheduled to leave Macon at 4 o'clock a. m. and to arrive in Atlanta at 7:30 o'clock, which is 3½ hours on the road. Yesterday morning the train was delayed in Macon by the collision of the previous day below that city, and did not leave until 6:20. Engineer Studdard was on the engine, and when conductor Carlton gave him the word "Go" in Macon, he drew back his lever and the fun began. The train fairly flew and besides making six stops it lost 30 minutes at Forsyth and came into

Fig 5.



Stroudley's Speed Indicator as Applied to a Locomotive.

Atlanta at 9:10 yesterday morning, making the 103 miles in 2 hours and 50 minutes. Deduct the stops and the 30 minutes lost at Forsyth and the trip was made in about two hours and a quarter. Engineer Studdard, who made this run, worked 326 miles in less than 14 hours. He left Atlanta Saturday night at 8:10 on a passenger engine, and went to Macon. He then went on to the wreck, 60 miles below Macon, and, turning back, brought his engine into Atlanta yesterday morning at 9:10.—*Atlanta (Ga.) Constitution, Nov. 3.*

A Hardened Criminal.

Probably the entire annals of crime depict no more hardened malefactor than the man whose duty it is to open and close the gate of the Central Pacific ferry on the other side of the bay. This black-hearted criminal lurks out of sight

until the front rank of the crowd waiting inside the lower human cattle pen is impelled by weariness to lean against said gate. Watching the opportunity he suddenly jerks the structure aside. Of course the victims fall flat, and by the time the rushing mob have trampled over them they are ready to be scraped up and sent aboard on a truck. Then the gate-keeper chuckles like a pirate in the third act, and sets his trap for the next lot. Mayor Bartlett could readily secure his re-election by setting a price on this gate fiend's head out of the Urgent Necessity fund, or something.—*San Francisco Evening Post.*

He Did Not Know Chicago.

A Chicago drummer balanced his chin on the edge of the seat in front of him, and tickled a sandy-haired passenger's ear with the remark:

"You've been in Chicago, of course?"

"Where?"

"Chicago."

An uncertain look came into the sandy-haired man's eyes.

"Let me see," he mused, retrospectively; "'pears to me I must have passed through there. I've traveled a good deal. I know I've heard the name before. What line of road is it on?"

"Forty lines of road. It's the biggest railroad centre on earth."

"Not bigger than Crestline, O., is it?" asked the passenger, with an amazed expression. "I've seen four trains at once at Crestline waitin' to start off. Talk about noise and confusion!"

The Chicago man's teeth began to chatter.

"Is Chicago a place where the train stops for dinner?"

"Naw," said the disgusted drummer. "Chicago is not a place where passengers stop for dinner."

"Of course, that's what I meant," explained the red-haired man gently. "Fact is," he went on with confidential frankness, "I've traveled so much and been in so many different places in my lifetime that I don't purtend to remember more'n a quarter of 'em. What's the name of the hotel in Chicago?"

"There ain't any," said the drummer gloomily.

Then he walked forward to the filter, filled his mouth full of water, gargled his throat, whooshed the liquid on the floor, and hung his leg over the corner of the box.

"Who is that evil-eyed, pink-haired, lumpy-legged prairie-eared microbe at the other end of the car?" he asked of the conductor, who was passing thro' the train.

"Do you mean that gentleman looking out of the window?"

"Ya-as."

"He's a fish merchant from St. Louis."—*Detroit Free Press.*

Sociable Travelers.

"Conversation not forbidden" is said to be a new notice to be put into the campaign cars of the most advanced railway company of the future. This, though it may be like rumor, falls into line with the ideas of a writer in the *Railway Express.*

"Old American Gentleman, traveling from Liverpool to London. Three gentlemen in all occupied the compartment, and for an hour after the train had begun its journey, never one had exchanged a syllable with the other. At last the American broke silence, and said: 'Gentlemen, I am L— D—. I have come from ————. I have been a merchant for 50 years, and now I am living at ease. I am 80 years of age, and I have two eyes, and one tongue, and, like a great many of my countrymen, I take pleasure in using them. My eyes feel the period in which they have done me service, and I cannot read for the motion of the train. Having introduced myself, I trust, gentlemen, you will not look upon me as a pickpocket." At this, one of the gentlemen drew out his card case and gave his card. This example was immediately followed by the other. 'What, gentlemen!' said the American; 'You do not seem to know one another; let me introduce you?' and with that he crossed his arms, and presented the card of one to the other. This was the beginning of a warm and long friendship."

An English friend says this is a libel, and considers that Americans are far more distrustful of their fellow-travelers than Englishmen. In pretty extensive journeys here, he says he only got into conversation with three men, two were born in the old country and the third had spent many years in Europe. In England, on the contrary, he had found it quite exceptional to go on a long journey without forming a very pleasant, if temporary, acquaintance.

A Railroad Ghost.

At midnight, when there is an unearthly silence in the river addition to the city of La Crosse, when naught but the fitful lights of ghastly phosphoresence can be seen moving like ill-omened sparks across the marsh, and when every glimmer that pierces the awful gloom of night seems to come stealing through the air from some lonely gravestone at this unseemly hour, when every honest ghost should be asleep, there appears a ghastly phantom on the railroad track, near the elevators, which paces back and forth along the iron rails, in shadowy garments that fade away, then come again, as if the night winds held them in their keeping. For many nights this strange creation from the other world has haunted this fateful spot. For many nights his shadowy form has hovered silently and mysteriously among the gloomy box cars that remain on the track, or has stood like a dim spectre upon the tender of the switch engine and showed its corpse-like features to the terrified trainmen. At these fearful moments, they have brushed the cinders from their eyes and gazed on each other, wondering, no doubt, if this was but the wild hallucination of an ardent spirit, or if the restless soul of some unfortunate railroad man had been doomed to walk the earth and make night work a burden to the boys who were still on the pay roll of the La Crosse Division. It is undoubtedly the latter. A year ago this ghost appeared. It was seen by hundreds. It seemed to predict an accident at every show up. Man after man quit the service of the yard foreman. They could not pass that awful spot, see the grinning skull of a disembodied spirit, feel the indescribable touch of an unseen hand, and worst of all come to know that the cursed ghost was following the shivering brakeman the length of his train, pulling coupling pins as fast as they were put in, without a kick. At last the ghost disappeared, and a few brave men were found who stayed on the pay roll. But, alas for human hopes, the ghost has reappeared and the trouble has commenced. It is known that no less than 10 railroad men have been killed near this spot since the track was laid. As many more have been drowned within a few feet of his ghostship's favorite haunt, and it was near here where a fated steamer with her living freight went up in a fearful fire. The associations of the place are uncanny. Monday night as the brakeman was about to couple a carload of number one wheat into the train, and before he had given the signal to "back up ten feet," he was dumbfounded to see the car gradually approaching him, up grade, moved by unseen hands. He wondered, and shook with fear, but made the coupling. The train was ready to pull out, the signal was given and the engine started. Not a car moved. Every pin had been silently pulled from the links, more swiftly than four brakemen could accomplish the feat. It was the ghost. There is no longer any doubt of it. What his object can be is a mystery. It is evident he wants something to appease his soul's desire. The *Republican and Leader* hopes for the best, but awaits future events with untold anxiety. In the meantime it advises all of the railway boys to stand by their couplings and not to let their hair rise even if they are able to swing their lanterns clear through a dozen apparitions who may hover around that ghostly region. It may be a spirit that wants a job.—*La Crosse (Wis.) Republican and Leader.*

Tramps.

Freight Conductor Vandemark, of the Troy & Boston railroad, finding the other night that a car on his train loaded with cotton was on fire, entered it while near Williamstown, Mass., to be assaulted by tramps, who kicked him and left him in the car. They escaped and he was taken to North Adams. His condition is critical.

H. C. Scribenhauser, a tramp from Chicago, who was beating his way through to San Francisco, was riding recently on a brake-beam of a car on a Central Pacific freight train when the cars passed over a road-crossing near Wadsworth; his clothing caught in the planks and he was torn from his resting-place. The wheels caught him and cut him in two at the waist, and also cut his left leg off.

On a Southern Train.

"Conductor, what is the cause of this delay?" asked a passenger on a Southern train that had been stopped for half an hour.

"The engineer, fireman and brakeman are having a barbecue," said the conductor.

"A barbecue?" inquiringly echoed the passenger.

"Yes, sir. You see a cow got on the track six miles below. The engineer crowded on all the steam he could and went for the critter. Well, I never saw a cow run so. She just left us miles behind in no time. If the durned fool had kept on she'd been all right; but when she got up here she sat right down and began eating grass off the ties. Then she fell asleep, and the engine struck her and broke her left leg. Bill, the fireman, finished the job, and she is on the fire now."

"When will we reach the next station?" asked the passenger.

"When the cow is roasted, I reckon."

As the conductor passed through the car a drummer said to the passenger: "We won't reach the next station at all, sir."

"Why?" said the passenger.

"We stop two miles above here and wait for the station to come along."—*New York Sun.*

Attempt at Train Wrecking.

A dispatch from Omaha, Neb., Oct. 29, says: "A dastardly attempt to wreck a Union Pacific west-bound passenger train was made last night, two miles east of Schuyler, Neb. The engineer saw the obstruction on the bridge and slackened the speed of the train, but not sufficient to prevent a collision, throwing the forward trucks of the engine off the track. The passengers received quite a severe shaking up, but nobody hurt and no damage done. It was found that four ties had been wedged into the east end of the bridge in such a manner as to make dangerous the obstruction. The watchfulness of the engineer prevented a serious disaster."

Sunday Trains in Massachusetts.

The remonstrances to the Railroad Commissioners against the running of a Sunday train on the Hoosac Tunnel line has been signed by only about 1,700 persons, many of them non-voters and many others residing at points distant from the line. The petition in favor of the train has been signed by more than 4,000, all voters and resident along the road. Business men claim that a through train of this class on a trunk line has become a necessity of modern civilization. Numbers of people wish to leave Chicago and St. Louis for Boston every day. Should those leaving Friday evening find themselves stranded at Pownal or at Rotterdam Junction and compelled to remain there over Sunday, there would be more sin committed than is involved in the running of the train to Boston. The question is still pending before the Commissioners.

It is expected that next week the Commissioners will render a decision on the petition of the Boston & Albany for leave to run freight trains on Sunday that contain live stock or perishable property. The remonstrance against such trains has been urged by religious people from Springfield, mainly in the interests of the trainmen, many of whom reside there. It is believed by these people that the pressure of shippers upon the railroad company has caused a gradually increasing encroachment upon the day of rest, and that the exception made in favor of live stock is one easily complied with, to the extent of one or two animals, so as to give excuse for hauling trains laden with general merchandise.—*Boston Advertiser Nov.* 1.

The Salt River Route.

In sending out the *Pathfinder Guide* for November from Boston to the press Mr. Weeks, the Manager, facetiously observes: "A great many persons, particularly editors and politicians, will 'get left' this month. To prevent a similar misfortune in connection with the passenger transportation lines, we send you a *Pathfinder*, which we trust you will find useful."

The *Pathfinder* is always useful to editors, but we fear that it will not prove equally so to candidates this month, for a diligent study of its pages fails to reveal any time-table of the Salt River route which so many travel about this time.

ANNUAL REPORTS.

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Troy & Greenfield	46
Union Pacific	196, 202
Utica & Black River	87
Vermont Valley	512
Wabash, St. L. & Pacific	337
Warren	535
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Wheeling & Lake Erie	728
Wilmington, Col. & Augusta	8
Wilmington & Northern	796
Wilmington & Weldon	9
Wisconsin Central	551
York & Peachbottom	411

Chicago & Atlantic.

This company, which owns the Erie line to Chicago, owns a line from Marion, O., to Hammond, Ill., 249 miles, and leases the use of the Chicago & Western Indiana from Hammond to Chicago, 20 miles. The following statements are from the report to the Ohio Commission for the year ending June 30, the first full year of its operation.

The stock is $10,000,000. The funded debt consists of $6,500,000 first-mortgage 6 per cent. bonds. This report does not mention $5,000,000 second-mortgage 6 per cent. bonds which have been authorized, but not sold, although some have been hypothecated. The bonds are provided for by a traffic contract with the Erie, and the New York, Pennsylvania & Ohio.

The earnings as given were as follows:

Passenger Department	$393,088
Freight "	1,049,202
Miscellaneous	5,424
Total ($5,382 per mile)	$1,447,714
Expenses (94.55 per cent.)	1,368,817
Net earnings ($293 per mile)	$78,897

The report as telegraphed gives the rental paid for the Chicago & Western Indiana at $170,888, making a deficit of $91,991 for the year. The net earnings shown above were 1.2 per cent. on the first-mortgage bonds.

Connecticut River.

This company owns a line from Springfield, Mass., to South Vernon, 50 miles, with branches to Chicopee, 2.35 miles, and to Easthampton, 3.50 miles. It leases the Ashuelot road, from South Vernon to Keene, N. H., 24 miles, making 79.85 miles worked. The following statements are from the report to the Massachusetts Railroad Commission for the year ending Sept. 30 last.

The general account is as follows, condensed:

Stock		$2,370,000
Bills, accounts and balances payable		888,061
Surplus, income account		946,317
Total		$4,204,378
Road, equipment and other permanent investments	$3,478,491	
Materials, receivables and cash	725,887	
		4,204,378

The company has no funded debt. The amount of stock was not changed during the year.

The traffic for the year was as follows:

	1883-84.	1882-83.	Inc. or Dec.	P c.
Passengers carried	1,479 949	1,484,155	D. 4 206	0.3
Passenger-miles	15,6 9,680	15,484,571	I. 145,089	0 9
Tons freight carried	636,120	632,865	I. 3,255	0.5
Ton-miles	15,115,967	15,589,258	D. 473,291	0.3

There was a slight increase in the average passenger journey, which was 10.58 miles last year. The average freight haul was 23.76 miles, a small decrease from the previous year.

The earnings for the year were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P.c.
Freight	$461,551	$475,249	D. $13,698	2.9
Passengers	371,796	366,732	I. 5,064	1.4
Other	67,660	69,554	D. 1,894	2.7
Total	$901,007	$911,535	D. $10,528	1.2
Expenses	684,063	685,643	D. 1,580	0 2
Net earnings	$216,944	$227,892	D. $8,948	4.0
Gross earn. per mile	11,284	11,416	D. 132	1.2
Net "	2,717	2.829	D. 112	4.0
Per cent. of exps.	75.92	75.22	I. 0.70	...

Receipts from interest and dividends are not included. Expenses include taxes and the rent of the Ashuelot road.

The result of the year was as follows:

Net earnings, as above	$216,944
Dividends, 8 per cent	189,600
Surplus for the year	$27,344

Interest on unfunded debt is offset by interest and dividends received. The company owns (but does not operate) the Vermont Valley road in Vermont and the Sullivan County road in New Hampshire, in which much of its surplus is invested.

During the year 2 employés were killed and 1 injured; 5 other persons were killed (4 of them were walking on the track) and 1 injured. No passengers were killed or injured on the road.

Evansville & Terre Haute.

This company owns and operates a line from Evansville, Ind., north to Terre Haute, 109 miles, with a branch from Owensville Junction to Mt. Vernon, 37 miles, making 146 miles in all. It also owns a branch from Terre Haute to Rockville, 23 miles, which is leased to the Terre Haute & Logansport Co. The report is for the year ending Aug. 31.

The equipment consists of 26 locomotives, 20 passenger-

train cars, 1,026 freight cars and 85 road and service cars.

The general account is as follows, condensed:

Stock	$3,000,000
Funded debt, including bonds on hand	4,257,000
Bills and accounts payable	161,556
Income account	495,329
Total	$7,913,885
Road and property	$6,453,014
Stocks and bonds owned	226.304
Company's bonds on hand	1,027.000
Material	47,044
Accounts and balances	136.292
Cash	24,231
	7,913,885

The funded debt was decreased $40.000 during the year. The bonds on hand include $175,000 Mt. Vernon Branch and $852,000 consolidated bonds. The amount of the latter on hand is $70,000 less than a year ago.

The earnings for the year were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Freight	$431,718	$449.007	D. $17,289	3.9
Passengers	206,823	211,248	D. 4,425	2.1
Mail, etc	114,566	91,425	I. 23,131	25.3
Total	$753.107	$751,690	I. $1,417	0.2
Expenses	365,810	387,228	D. 21,418	5.5
Net earnings	$387,297	$364.462	I. $22,835	6.3
Gross earn. per mile	5,158	5,149	I. 9	0.2
Net " "	2,653	2,496	I. 157	6.3
Per cent. of exps	48.44	51.51	D. 3.07	....

The increase in net earnings was due almost entirely to the reduction in expenses, the gross earnings showing only a very slight change.

The income account is as follows:

Net earnings, as above	$387,297
Interest paid	$202.520
Mt. Vernon Branch bond div	150,000
	352,520
Surplus for the year	$34,777
Surplus, Sept., 1883	460,552
Surplus, Aug. 31, 1884	$495,329

The President, Mr. D. J. Mackey, says in his report: "Three years ago, in taking charge of this property, I was at once satisfied that there must be put into force and execution the most rigid system of economy that could be organized, and the experience that three years has given only confirms me in the absolute necessity of reaching the minimum in each and every individual item in each and every department of the railroad. * * * A feature of business that is compelling economical management is the continually declining rate per ton-mile on traffic; this is steadily going on and no power seems to stay it. Each year shows a reduction of a few mills, while management will be compelled to show as an offset a reduction in operating expenses.

"This year has been a very hard one for all. We have handled as many car-loads as last year, but the rates have been very low. From February to July rates were the lowest ever known. The outlook is good. All crops are very full, and with fair rates we will make an elegant showing for the fiscal year just beginning."

Boston & Albany.

The report of this company to the Massachusetts Railroad Commission for the year ending Sept. 30 shows that at the close of the year it operated 384 miles of road, an increase of 10 miles during the year. The road consists of the main line from Boston to Albany, 202 miles, and 182 miles of branches.

The equipment consists of 243 locomotives; 210 passenger, 15 parlor and sleeping, and 51 baggage, mail and express cars; 5,520 freight cars; 650 other cars. The increase during the year was 7 passenger, 2 baggage and 124 freight cars.

The general account in full is as follows:

Liabilities:	
Capital stock	$20,000,000
Funded debt	10,858,000
Unfunded debt	762,204
Profit and loss balance	950,758
Total liabilities	$32.570,963
Assets:	
Cost of road	$24,268,716
Cost of equipment	3,145,400
Lands in Boston and Worcester	119,678
Springfield & Northeastern Railroad	438,358
Newton Highlands Branch	411,400
Stock of West Stockbridge Railroad	13.000
Stock of Hudson River bridges	475,485
Shares of Boston & Albany Railroad	1,044,337
Total permanent investments	$30,016,375
Cash	$434,324
Bills receivable	300,000
Due from agents, etc	365,163
Material and supplies	566.188
Trustees improvement fund	888,911
Total cash assets	$2,554.587
Total assets	$32,570 963

There was no change in stock or bonds during the year. The stock owned by the company was diminished from $3,858,000 to $1,044,337 by the distribution of 17,588 shares of the stock bought from the state among the shareholders as a stock dividend.

The profit and loss balance includes $61,847 balance of income and $888,911 in the improvement fund.

The traffic for the year was as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c
Train miles	5,680,060	5,651.302	I. 28,758	0.5
Passengers carried	8,794,412	8,079.072	I. 715.340	8.8
Passenger-miles	167,402,441	157,255,971	I. 10.146,470	6.5
Tons freight carried	3,325.517	3,411,324	D. 85,807	2.5
Ton-miles	374,347,455	373,535,456	I. 911,999	0.2
Av. rate:				
Per passenger-mile	1.90 cts.	2.08 cts.	D. 0.18 ct.	8.7
Per ton-mile	1.09 "	1.20 "	D. 0.11 "	9.2

The average rate per ton-mile was: Through, 0.78 cent; local, 1.81 cents; average of all, 1.09 cents.

The number of employés was 5,138, an average of 13.37 per mile of road worked by the company.

The earnings for the year were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P.c.
Passenger Dept	$3,556,688	$3,631,776	D. $75,088	2.1
Freight "	4,090,302	4,472,180	D. 381,878	8.5
Rents, etc	501,723	435,919	I. 65,804	15.1
Total	$8,148,713	$8,539,875	D. $391,162	4.6
Expenses	5,785,877	6,158,904	D. 373,027	6.1
Net earnings	$2,362,836	$2,380,971	D. $18,135	0.8
Gross earn. per mile	21,615	22,773	D. 1,158	5.1
Net " " "	6,267	6,349	D. 82	1.3
Per cent. of exps	71.00	72.12	D. 1.12	....

Taxes are included in expenses, amounting to $522,850 last year. Among the operating expenses are also included about $800,000 for repairs—which, in this case, means con-

RAILROAD EARNINGS IN SEPTEMBER.

Name of Road.	Mileage. 1884.	1883.	Inc.	Dec.	P. c.	Earnings. 1884.	1883.	Inc.	Dec.	P. c.	Earnings per Mile. 1884.	1883.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Boston, Hoosac Tun. & West.	87	87	....	....	....	$ 46,737	$ 34,794	$ 11,943	$	34.1	$ 537	$ 400	$ 137	$	34.1
Eastern	284	284	....	....	....	338.015	340.053	.....	2,038	0.6	1,190	1,197	....	7	0.6
Grand Trunk	2,918	2,794	124	....	4.4	1,480,934	1,663.345	.....	182,411	10.9	508	595	...	87	14.5
Long Island	354	354	..	....	....	323,594	285,826	37,768	.....	13.2	914	809	105	.....	13.2
N. Y. Sus. & Western	147	147	....	....	....	95,417	90,685	4,732	.....	5.2	649	617	32	....	5.2
Northern Central	322	322	....	....	....	476,811	545,727	.....	68,916	12.7	1,481	1,695	....	214	12.7
Pennsylvania*	2,150	2,070	80	....	3.9	4,458.872	4,634,999	....	176,127	3.8	2,074	2,239	....	165	7.4
Philadelphia & Reading†	1,560	1,560	.....	.....	....	2,870,451	3,333.217	.....	456,766	13.7	1,844	2,137	....	293	13.7
Rochester & Pittsburgh	294	294	....	.....	....	106,809	83.301	23,508	.....	28.2	363	283	80	....	28.2
West Jersey	188	188	....	.....	....	131,406	110,932	20,474	.....	18 4	699	590	109	....	18.4
Total, 10 roads	8,304	8,100	204	....	....	10,335,046	11,122,871	98,425	886,258	....	1,245	1,373	....	128	....
Total inc. or dec	.....	.....	204	....	2.5	.....	.....	.....	787,833	7.1	.....	.....	...	128	9.3
SOUTHERN ROADS.															
Alabama Great Southern	290	290	..	.....	...	95,269	96,386	.....	1,117	1.2	328	332	....	4	1.2
Chesapeake & Ohio	517	517	....	....	...	306,365	365,471	.....	59,106	16.2	592	707	....	115	16.2
Eliz., Lex. & Big Sandy	130	130	....	....	....	76,307	82,935	.....	6,628	8.0	587	638	....	51	8.0
Ches., Ohio & Southwestern	399	399	....	....	....	116,464	130,927	.....	14,463	11.0	292	328	....	36	11.0
Cin., N. O. & Tex. Pacific	336	336	....	....	....	237,508	239,787	.....	2,279	0.9	707	714	....	7	0 9
East Tenn., Va. & Ga.	1,098	1,098	....	....	....	369,311	394,434	.....	25,123	6.3	336	359	....	23	6.3
Fla. Ry. & Nav. Co.	498	477	21	....	4.4	60,737	74,758	.....	14,021	18.7	122	157	..	35	22.4
Kentucky Central	254	220	34	....	15.5	100,598	91,155	9,443	.....	10.4	396	414	....	18	4.4
Louisville & Nash	2,065	2,065	....	....	....	1,151,720	1,334,179	.....	182,459	13.7	558	646	....	88	13.7
Mobile & Ohio	528	528	..	....	....	158,585	185,902	.....	27,317	14.5	300	352	..	52	14.5
Nashville, Chatta. & St. L.	574	554	20	....	3.6	210,585	197,799	12,786	.....	6.4	367	357	10	..	2.8
N. Orleans & Northeastern	195	120	75	....	6.3	27,434	11,164	16,270	.....	145.3	141	93	48	....	51.6
Norfolk & Western	503	503	....	....	....	270,010	287,202	.....	17,192	6.0	537	571	....	34	6.0
Rich. & Danville	757	757	....	....	....	337,387	362,292	.....	24,905	6.9	446	479	....	33	6 9
Char., Col. & Augusta	370	339	31	....	9.1	64,276	71,411	.....	7,135	10.0	174	211	....	37	17.6
Col. & Greenville	296	296	....	....	....	51,130	64,849	.....	13,719	21.1	173	219	....	46	21.1
Virginia Midland	352	352	....	....	....	170,268	185,505	.....	15,237	8.2	484	527	....	43	8.0
Western N. Carolina	210	200	10	....	5.0	45,698	46,241	.. ..	543	1.2	218	231	....	13	5.7
Shenandoah Valley	249	249	....	....	....	81,474	91,726	.....	10,252	11.2	327	368	....	41	11.2
South Carolina	247	247	....	....	....	109,599	132.821	.....	23,222	17.5	444	538	...	94	17.5
Vicksburg & Meridian	142	142	....	....	....	41,662	45,370	.....	3,708	8.2	293	320	....	27	8.2
Total, 21 roads	10,010	9,819	191	..	....	4,082,387	4,492,314	38,490	448,426	....	408	457	....	49	....
Total inc. or dec	.....	.....	191	...	1.9	.....	.....	.....	409,927	9.1	.....	.....	....	49	10.7
CENTRAL GROUP.															
Chi. & Eastern Ill	252	252	....	.....	..	154,313	155,537	.....	1,224	0.8	612	617	....	5	0.8
Chi. & West Michigan	410	410	....	.....	....	119,825	142,016	.....	22,191	15.6	292	346	...	54	15.6
Cin., Ind., St. L. & Chicago	342	342	....	.....	....	246,578	249,886	.....	3,308	1.3	721	731	....	10	1 3
Cin., Wash. & Baltimore	284	284	....	.....	....	184,016	215.092	.....	31.076	14.5	648	757	....	109	14.5
Cleve., Akron & Columbus	144	144	....	.....	....	46,587	54,109	.....	7,522	13.9	324	376	....	52	13.9
Cleve., Col., Cin. & Ind.	391	391	....	.....	....	320,120	411,614	.....	91,485	22.2	819	1053	....	234	22.2
Detroit, Lansing & No.	258	260	....	2	0.8	120,424	156,036	.....	35,612	23.0	467	600	....	133	22.2
Evansville & Terre Haute	146	146	....	.....	....	76,774	67,054	9,720	.....	14.5	526	459	67	....	14.5
Flint & Pere Marquette	362	347	15	.....	4.3	172,558	204,863	.....	32,305	15.7	477	590	....	113	19.2
Illinois Central‡	1,526	1,501	25	.....	1.7	887,982	1,045,902	.....	157,920	15.1	582	697	....	115	16.4
Ind., Bloom. & West	696	696	....	.....	....	281,643	292,906	.....	11,322	3.8	405	421	...	16	3.8
Lake Erie & Western§	387	387	....	.....	....	146,000	148,374	.....	2,374	1.6	377	383	..	6	1.6
Ohio Central	212	212	....	.....	....	98,866	102,691	.....	3,825	3.7	466	484	..	18	3.7
Ohio & Mississippi	615	615	....	.....	....	396,568	497,729	.....	101,161	20.3	645	809	....	164	20.3
Ohio Southern	130	130	....	.....	....	46,384	38,667	7,717	.....	19.8	357	298	59	....	19.8
Peoria, Decatur & Ev	254	254	....	.....	....	71,463	72,575	.....	1.112	1.5	281	286	...	5	1.5
St. L., Alton & Terre Haute:															
Main Line	195	195	....	.....	....	116,429	141,793	.....	25,364	18.0	597	727	....	130	18.0
Belleville Line	138	138	....	.....	....	62,029	80,732	.....	18,703	23 1	450	585	....	135	23.1
Tol., Ann Arbor & N. Mich.	61	61	..	.....	....	23,851	18,923	4,928	.....	25.9	391	310	81	.....	25.9
Total, 19 roads	6,803	6,765	40	2	....	3,572,419	4,096,558	22,365	546,504	....	525	606	....	81	....
Total inc. or dec	.....	.....	38	.....	0.6	.....	.....	.....	524,139	12.8	.....	.....	....	81	13.4
NORTHWESTERN ROADS.															
Bur., Cedar Rap. & No.	714	714	....	.....	....	261,159	260,357	802	.....	0.3	366	365	1	.....	0.3
Central Iowa	500	500	....	.....	....	148,999	115,651	33,339	.....	28.7	298	231	67	.....	28.7
Chi. & Alton	850	850	....	.....	....	882,556	934.944	.....	52,388	5.6	1,038	1,100	....	62	5.6
Chi., Mil. & St. Paul	4,800	4,550	250	.....	5.5	2,201,000	2,220,684	.....	19,684	0.9	459	488	....	29	6.0
Chi. & Northwestern	3,850	3,735	115	.....	3.0	2,289,000	2,647.968	.....	358,968	13.5	595	709	....	114	16.2
Chi., St. P., Minn. & O.	1,290	1,225	65	.....	5.3	519,500	523,808	.....	4,308	0.8	403	428	....	25	6.0
Des Moines & Ft. Dodge	138	138	....	.....	....	42,873	40,102	2,771	.....	6.9	311	291	20	.....	6.9
Green Bay, Win. & St. P.	220	220	....	.....	....	25.112	33,027	.....	7,915	24.0	114	150	....	36	24.0
Ill. Central, Iowa lines	402	402	....	.....	....	160 861	201,907	.....	41,046	20.3	400	502	....	102	20.3
Marquette, H. & Ont.	138	100	38	.....	38.0	102,531	128,804	.....	26,273	20.3	743	1,288	....	545	42.0
Mil., Lake Shore & West.	400	326	74	.....	22.7	97,396	98,249	.....	853	0.9	243	301	..	58	19.3
Mil. & Northern	227	185	42	.....	22.7	42,873	39,040	3,833	.....	9.8	189	211	..	22	10.5
Minneapolis & St. L.	420	420	....	.....	...	168,573	126,289	42,284	.....	33.6	401	301	100	...	33.6
Wisconsin Central	440	440	....	.....	....	112,684	119,679	.....	6.995	5.8	256	272	....	16	5.8
Total, 14 roads	14.389	13,805	584	.....	....	7,055,108	7,490,509	83,029	518,430	....	490	542	....	52	....
Total inc. or dec	.....	.....	584	.....	4 2	.....	.....	.....	435,401	5.8	....	....	....	52	9.3
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	2,794	1,931	863	.....	45.2	632,000	494,000	138,000	.....	28.0	226	256	....	30	21.7
Northern Pacific	2,453	2,365	88	.....	3.7	1,236,565	1,194,714	41,851	.....	3.5	504	505	....	1	0.2
St. P. & Duluth	227	227	.....	.....	....	154,509	142,878	11,631	.....	8.1	681	629	52	.....	8.1
St. P., Minn. & Manitoba	1,397	1,350	47	....	3.5	738,500	777,804	.....	39,304	5.1	529	576	...	47	8.2
Total, 4 roads	6,871	5,873	998	.....	....	2,761,574	2,609,396	191,482	39,304	.....	402	444	..	42	....
Total inc. or dec	.....	.....	998	.....	16.9	.....	.....	152,178	.....	5.9	....	....	....	42	9.5
SOUTHWESTERN ROADS.															
Fort Worth & Denver	110	110	....	.....	....	38,000	42,389	.....	4,389	10.4	345	385	....	40	10.4
Gulf, Colorado & Santa Fe	536	536	....	.....	....	187,745	228,292	.....	40,547	17.8	350	426	....	76	17.8
Houston, E. & W. Texas	140	120	20	.....	16.7	20,932	28,968	.....	8,036	27.7	150	241	....	91	38.0
Kan. City, Ft. Scott & Gulf	389	389	....	.....	....	206,750	195,021	11,729	.....	6.0	531	501	30	....	6.0
Little Rock & Ft. Smith	168	168	....	.....	....	48,271	44,858	3,413	.....	7.6	287	267	20	....	7.6
Little Rock, Miss. R. & Tex.	173	173	....	.....	....	26,419	27,087	.....	668	2.5	153	157	....	4	2.5
St. L., Ft. Scott & Wichita	182	160	22	.....	13.7	46,404	32,340	14,064	.....	43.7	255	202	53	...	26.1
St. L. & San Francisco	775	750	25	...	3.3	454,527	376,577	77,950	.....	20.7	586	502	84	...	16.8
Vicks., Shreveport & P.	170	73	97	.....	132.9	34,770	19,389	15,381	.....	80.3	205	266	....	61	22.9
Total, 9 roads	2,643	2,479	164	.....	....	1,063,818	994,931	122,537	53,640	...	403	403	2	...	....
Total inc. or dec	.....	.....	164	.....	6.6	.....	.....	68,897	.....	6.9	...	....	2	....	0.5
FAR WESTERN AND PACIFIC ROADS.															
Central Pacific	3,004	3,003	1	.....	.....	2,268,000	2,426,348	.....	158,348	6.5	755	808	...	53	6.5
Utah Central	280	280	.....	.....	.....	98,592	104,768	.....	6,176	5.9	352	375	....	23	5.9
Total, 2 roads	3,284	3,283	1	.....	.....	2,366,592	2,531,116	.....	164,524	....	721	771	....	50	....
Total inc. or dec	.....	.....	1	.....	.....	.....	.....	.....	164,524	6.4	.....	.....	....	50	6.4
GRAND TOTAL:															
Total, 79 roads	52,304	50,124	2,182	2	....	31,236,944	33,337,693	556,337	2,657,088	....	597	665	....	68	....
Total inc. or. dec	.....	.....	2,180	.....	4.3	.....	.....	.....	2,100,749	6.3	.....	.....	....	68	10.2

* Includes all lines east of Pittsburgh and Erie.
† Includes New Jersey Central in both years.
‡ Includes Illinois lines and Southern Division.
§ Not in table for the nine months.

struction of track, building new stations at various points, expense of electric signals, etc.

The income account was as follows:

Net earnings, as above		$2,362,836
Rentals	$75,000	
Interest	662,900	
Dividends, 8 per cent	1,547,804	
		2,285,704
Surplus for the year		$77,132
Surplus, Oct. 1, 1883		2,798,795
Total		$2,875,927
Less 17,588 shares of stock distributed by vote of board.		2,814,080
Surplus, Sept. 30, 1884		$61,847

During the year 4 passengers were killed and 5 injured; 10 employés were killed and 88 injured; 23 others were killed and 16 hurt; a total of 37 killed and 109 injured on the road.

The number of stockholders on Sept. 30 was 6,590, of whom 5,703 live in Massachusetts.

Connecticut & Passumpsic Rivers.

This company owns a line from White River Junction, Vt., northward to the Canada boundary at Derby Line, 110.3 miles. It controls and leases the Massawippi Railway, from Derby Line to the Grand Trunk road at Sherbrooke, P. Q., 34.7 miles, with a branch to Stanstead, P. Q., 2 miles, making 147 miles worked. The company also owns the Newport & Richford road, from Newport, Vt., to the Canada line, 32 miles, but leases that road to the Southeastern Railway Co., of Canada. The 39th annual report is for the year ending June 30 last.

The equipment consists of 30 locomotives; 18 passenger, 1 postal and 12 baggage, mail and smoking cars; 520 box, 100 stock, 490 platform and 9 caboose cars; 2 boarding and 3 crane cars, besides the necessary equipment used in road repairs.

The general account, condensed, is as follows:

Stock		$2,244,400.00
Bonds		1,850,000.00
Notes payable		324,457.21
Reserve		245,570.77
Accounts and balances		48,311.12
Earnings, surplus		5,023.45
Total		$4,717,762.55
Construction	$3,516,525.29	
Newport & Richford R. R.	350 000.00	
Southeastern Railway	176.937.40	
Other stocks and property	69.590.28	
Cashier, including materials	250,648.24	
Accounts and balances	11,751.85	
Notes receivable	336,479.23	
Cash	5,821.26	
		4,717,762.55

Stock and bonds remain unchanged. There was an increase of $79,457 in notes payable. The funded debt consists of $1,500,000 main line 7 per cent. bonds, and $350,000 Newport & Richford 5 per cent. bonds, the interest charge being $122,500 yearly.

The traffic for the year was as follows:

Train-miles:	1883-84.	1882-83.	Inc. or Dec.	P.c.
Passenger	275,059	303,063	D. 28,004	9.2
Freight	342,604	258,773	I. 43,831	14.7
Service	18,000	25,410	D. 7,410	29.2
Total	635,663	627,246	I. 8,417	1.3
Passengers carried	227,497	227,598	D. 101	...
Passenger-miles	8,060,667	8,365,277	D. 304,610	3.6
Tons freight carried	370,816	361,442	I. 9,374	2.5
Ton-miles	23,281,523	22,792,090	I. 489,433	2.1
Av. train load:				
Passengers, No	29	28	I. 1	3.6
Freight, tons	68	76	D. 8	10.5

There was a decrease in passenger traffic, but an increase in freight movement, the latter being carried at somewhat lower rates.

The earnings for the year were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P.c.
Freight	$449,385	$478,908	D. $29,523	6.2
Passengers	306,289	309,940	D. 3,651	1.2
Mail and express	31,072	30,524	I. 549	1.8
Rents, etc	51,194	65,481	D. 14,287	21.8
Total	$837,940	$884,852	D. $46,912	5.3
Expenses	538,789	613,882	D. 75,093	12.2
Net earnings	$299,151	$270,970	I. $28,181	10 4
Gross earn. per mile	5,700	6,019	D. 319	5.3
Net " "	2,035	1 843	I. 192	10.4
Per cent. of exps.	64.79	69.38	D. 5.09	....

Taxes are included in expenses, amounting to $14,956 last year. The decrease in earnings was accompanied by a reduction of expenses sufficient to leave a fair gain in net earnings.

The result of the year was as follows:

Net earnings, as above		$299,150.99
Surplus from previous year		5,616.98
Total		$304,767.97
Interest paid	$130.456.52	
Rental, Massawippi road	46,000.00	
Dividends, 5½ per cent	123,288.00	
		299,744.52
Balance, June 30, 1884		$5,023.45

The rental paid for the Massawippi road is 6 per cent. on its $400,000 bonds and the same dividends on its $400,000 stock as are paid on the lessee's own stock.

One locomotive, 25 flat, 1 postal and two first-class passenger cars have been added to the equipment, and all the old rolling stock has been thoroughly repaired. A new brick passenger station has been built at St. Jonnsbury and a new engine house at Newport. Various repairs have been made to other buildings, and 1,000 tons of steel rails and 81,641 new ties have been laid. No accident of a serious character has occurred. Concerning the relations of the company with the Southeastern, of Canada, the report contains the following:

"In July of last year the Southeastern Railway, which forms part of our line between Boston and Montreal, became so badly embarrassed as to necessitate that road passing into the hands of the trustees of the mortgage bondholders, and from Oct. 1 last it has been operated by said trustees. The mortgage bonds of the Southeastern Railway amount to $2,000,000, of which this company owns $400,000. Upon the trustees taking possession of the Southeastern road it became necessary for us to join with the other bondholders in the purchase of a lien which the Wason Manufacturing Co. had upon the car equipment of the road, in order to prevent the interruption of the business of the line. We joined in the purchase, and now own four-twentieths of said cars, which are leased to said trustees at a rental, which is paid monthly. It also became necessary to raise $100,000 and loan to the trustees to pay off some claims, which by the laws of Canada were a lien upon the wood and other supplies, and for the purpose of operating the road. This was done by all the bondholders contributing to the loan to the amount of 5 per cent. on the bonds held by them. This company contributed its share to said loan. This, together with the increase of wood and materials on hand more than a year ago, will account for the increase in the floating debt of the company. Since Oct. 1 the interest on the notes of the Southeastern Railway (for which the $400,000 bonds are held) has not been paid, amounting to $15,147.80, which explains the decrease in interest received as compared with last year. The decrease in freight earnings is partly owing to the failure of the copper mine at Ely, which has not been in operation for the last ten months, and also from the general depression in business. There is a fair prospect for an increase in business from both the Massawippi and the Southeastern roads next year."

RAILROAD EARNINGS, NINE MONTHS ENDING SEPTEMBER 30.

Name of Road.	Mileage. 1884.	1883.	Inc.	Dec.	P. c.	Earnings. 1884.	1883.	Inc.	Dec.	P. c.	Earnings per Mile. 1884.	1883.	Inc.	Dec.	P.c.
EASTERN ROADS.						$	$	$	$		$	$	$	$	
Bos., Hoos. T. & W.	87	87	....	....	....	328,196	248,837	79,359	.....	31.9	3,772	2,860	912	...	51.9
Eastern	284	284	....	....	....	2,697,880	2,740,789	.....	42,909	1.6	9,500	9,651	....	151	1.6
Grand Trunk	2,918	2,794	124	...	4.4	12,460,218	13,944,471	.....	1,484,253	10.6	4,270	4,991	....	721	14.4
Long Island	354	354	....	..	....	2,204,447	2,152,159	52,288	.....	2.4	6,228	6,080	148	....	2.4
N. Y., Susq. & W.	147	147	..	....	....	750,190	749,006	1,184	.....	0.2	5,103	5,095	8	....	0.2
Northern Central	322	322	....	....	....	4,085,008	4,552,137	.....	467,129	10.3	12,686	14,137	....	1,451	10.3
Pennsylvania*	2,121	2,058	63	....	3.2	36,398,108	37,892,916	.....	1,494,808	3.9	17,161	18,412	....	1,251	6.8
Phila. & Reading†	1,560	1,250	310	....	24.8	23,161,919	20,816,206	2,345,713	.....	11.3	14,847	16,653	....	1,806	10.8
Rochester & Pitts.	294	198	96	...	48.5	846,054	423,604	422,450	.....	99.7	2,878	2,139	739	...	34.5
West Jersey	188	185	3	....	1.6	1,060,815	982,923	77,892	.....	7.9	5,643	5,313	330	....	6.2
Total, 10 roads	8,275	7,679	596	..	....	83,992,835	84,503,048	2,978,886	3,489,099	....	10,150	11,004	....	854	....
Total inc. or dec.	.....	.....	596	....	7.7	.....	.....	.....	510,213	0.6	.....	.....	....	854	7.8
SOUTHERN ROADS.															
Ala. Gt. Southern	290	290	....	....	....	775,083	741,433	33,650	.....	4.5	2,673	2,557	116	...	4.5
Ches. & Ohio	517	517	....	....	....	2,689,994	2,879,284	.....	189,290	6.6	5,203	5,570	....	367	6.6
Eliz., Lex. & B. S	130	130	....	....	....	557,507	538,828	18,679	.....	3.5	4,288	4,145	143	....	3.5
Ches., O. & S. W.	399	399	...	....	....	958,997	915,178	43,819	.....	4.8	2,404	2,294	110	....	4.8
Cin., N. O. & Tex. P	336	336	....	....	....	1,899,939	1,866,750	33,189	.....	1.8	5,655	5,556	99	....	1.8
East Tenn., Va. & Ga.	1,098	1,077	21	....	1.9	2,824,350	2,904,072	.....	79,722	2.7	2,563	2,696	....	133	4.9
Fla. Ry. & Nav. Co.‡	486	477	9	...	1.9	704,155	649,027	55,128	.....	8.5	1,449	1,361	88	....	6 4
Kentucky Central	232	2 0	12	....	5.5	667,336	619,879	47,457	.....	7.7	2,876	2,813	63	....	2 0
Louisville & Nash.	2,065	2,050	15	....	0.7	9,885,382	10,085,465	.....	200,083	1.9	4,787	4,920	....	133	2.7
Mobile & Ohio	528	528	...	....	....	1,403,669	1,440,096	.....	36,427	2.5	2,658	2,727	....	69	2.5
Nash., Chat. & St. L.	557	554	3	....	0.5	1,761,432	1,711,915	49,517	.....	2.9	3,162	3,090	72	....	2 4
N. O. & Nor'east	195	81	114	....	140.7	268,606	69,190	199,416	.....	289.0	1,377	854	523	....	61.3
Norfolk & Western	503	464	39	...	8.5	1,930,745	1,977,536	.....	46,791	2.4	3,838	4,262	....	424	9.9
Rich. & Danville	757	757	...	....	....	2,706,559	2,716,974	.....	10.415	0 4	3,443	3,457	....	14	0.4
Char., Col. & Aug.	361	339	22	...	6.5	511,124	570,671	.....	59,547	10.4	1,416	1,683	....	267	15.7
Col. & Greenville	296	296	....	....	....	418,744	515,922	.....	97,178	19.0	1,415	1,743	....	328	19.0
Va. Midland	352	352	....	....	....	1,184,474	1,244,536	.....	60,062	4.8	3,365	3,536	....	171	4.8
Western N. C	207	196	11	....	5.5	321,145	268,115	53,030	.....	19.8	1,551	1,368	183	....	13.4
Shenandoah Valley	249	249	....	....	....	557,521	610,090	.....	61,569	9.9	2,240	2,486	....	246	9.9
South Carolina	247	245	2	....	0.8	816,913	926,986	.....	116,073	12.5	3,282	3,784	..	501	13.2
Vicks. & Meridian	142	142	....	....	....	332,717	336,753	.....	4,036	1.2	2,343	2,372	....	29	1.2
Total, 21 roads	9,947	9,699	248	....	....	33,170,392	33,597,700	553,885	961,193	....	3,335	3,464	....	129	....
Total inc. or dec.	.....	.....	248	..	2.6	.....	.....	.....	427,308	1.3	.....	.....	....	129	3.7
CENTRAL GROUP.															
Chi. & Eastern Ill.	252	252	....	....	....	1,128,024	1,221,598	.....	93,574	7.7	4,476	4,848	....	372	7.7
Chi. & West Mich.	410	401	9	..	2.2	1,136 840	1,168,169	.....	31,329	2.7	2,773	2,913	...	140	4.8
Cin., Ind., St. L. & Chi	342	342	....	....	....	1,781,985	1,844,658	.....	62,674	3.4	5,210	5,394	....	184	3.4
Cin., Wash. & Balt.	284	284	....	....	....	1,288,278	1,420,082	.....	131,804	9.3	4,536	5,000	....	464	5.3
Cleve., Akron & Col.	144	144	....	....	....	361,365	399,804	.....	38,439	9 6	2,510	2,776	....	266	9.6
Cleve., Col., Cin & I.	391	391	..	..	....	2,768,465	3,238,137	.....	469,672	14 5	7,080	8,282	....	1,202	14.5
Det., Lan. & No.	258	238	20	....	8.3	1,014.162	1,174,694	.....	160,532	13.7	3,931	4,936	....	1,005	20.3
Ev. & Terre Haute	146	146	....	....	....	567,003	546,930	20,073	.....	3.6	3,884	3,746	138	....	3.6
Flint & Pere Marq.	362	347	15	....	4.3	1,733,773	1,860,844	.....	127,071	6.8	4,789	5,363	..	574	10.7
Illinois Central§	1,526	1,501	25	....	1.7	7,209,751	7,714,983	.....	505,232	6.5	4,725	5,140	....	415	8.1
Ind., Bloom. & W.	696	696	....	....	....	1,967.846	2,217,811	.....	249,965	11.3	2,827	3,187	....	360	11.3
Ohio Central	212	212	....	....	....	826,351	788,670	37,681	.....	4.8	3,808	3,720	178	....	4.8
Ohio & Mississippi	615	615	....	....	....	3,020,316	3,358,204	.....	337,888	10.1	4,911	5,46	....	549	10.1
Ohio Southern	130	130	....	....	....	330,343	259,028	71,315	.....	27.5	2,541	1,992	549	....	27.5
Peoria, Dec. & Ev.	254	254	....	....	....	571,391	528,483	42,908	.....	8.1	2,250	2,081	169	....	8.1
St. L., Alton & T. H:															
Main Line	195	195	....	....	....	907,383	1,074.891	.....	107,508	10.0	4,961	5,512	...	551	10.0
	138	128	10	....	7.8	543,249	601,352	.....	58,103	9.7	3,937	4,698	....	761	16.2
Tol., Ann A. & N.M.	61	61	....	....	....	168,755	141,772	26.983	.....	19.0	2,766	2,324	442	....	19.0
Total, 18 roads	6,416	6,337	79	...	....	27,385,280	29,560,110	198,960	2,373,790	....	4,268	4,664	..	396	....
Total inc. or dec.	.....	.....	79	....	1.3	.....	.....	.....	2,174,830	7.3	.....	.....	....	396	8.5
NORTHWESTERN ROADS.															
Bur., Ced. Rap. & No.	714	714	....	....	....	1,952,462	1,969,724	.....	17,262	0.9	2,734	2,759	....	25	0.9
Central Iowa	412	348	64	...	18.4	1,032,119	914,781	117,338	.....	12.8	2,505	2,629	....	124	4.7
Chi. & Alton	850	850	....	....	....	6,338,444	6,358,585	.....	20,141	0.3	7,457	7,481	..	24	0.3
Chi., Mil. & St. P.	4,772	4,527	245	....	5.4	16,405.000	16 590,115	.....	185.115	1.1	3,4 8	3,665	....	227	6.2
Chi. & N. W.	3,866	3,600	266	....	7.4	16,961,886	18,100,973	.....	1,139,087	6.3	4,387	5,028	....	641	12.8
Chi., St. P., M. & O.	1,290	1,176	114	..	9.6	4,152,077	3,827,065	325,012	.....	8.5	3.219	3,256	...	37	1.1
Des Moines & Ft. D	138	138	....	....	....	256,994	238,530	18,464	.....	7.7	1,862	1,728	134	..	7.7
Green Bay, W. & St. P	220	220	....	....	....	238,750	280,552	.....	41,802	14.9	1,085	1,275	....	190	14.9
Ill. Cent., Iowa lines	402	402	....	....	....	1,203,538	1,453,583	.....	250,045	17.2	2,994	3,616	....	622	17.2
Marquette, H. & O.	150	100	30	...	30.0	706,215	691,729	14,486	.....	2.1	5,432	6,917	....	1,485	21.4
Mil., L. S. & W.	38	323	57	....	17.6	813,494	766,668	46,826	.....	6.1	2,141	2,374	....	233	9.8
Mil. & Northern	227	185	42	....	22.7	377,494	346,770	30,724	.....	8.9	1,663	1,874	....	211	11.2
Minneapolis & St. L.	420	420	....	....	....	1,325,283	1,156,859	168,424	.....	14.6	3,155	2,755	400	.	14.6
Wisconsin Central	440	440	....	....	....	1,040,898	1,000,013	10,885	.....	1.1	2,366	2,341	25	...	1.1
Total, 14 roads	14,261	13,443	818	....	....	52,804,654	53,725,947	732,159	1,653,452	....	3,703	3,997	....	294	....
Total inc. or dec	.....	.....	818	....	6.1	.....	.....	.....	921,293	1.7	.....	.....	....	294	7.4
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	2,309	1,543	766	....	49.7	3,993,832	3,845,226	148,606	.....	3.9	1,730	2,492	....	762	30.5
Northern Pacific	2,465	1,764	701	..	39.0	9,277,191	6,619,621	2,657,570	.....	40.1	3,764	3,753	11	.....	0.3
St. P. & Duluth	227	212	15	....	7.4	891,005	935,466	.....	44,461	4.7	3,921	4,413	....	492	11.2
St. P., Minn. & Man	1,389	1,290	99	....	7.4	5,562,450	5,932,725	.....	370,275	6.2	4.005	4,509	....	504	13.0
Total, 4 roads	6,390	4,809	1,581	...	....	19,724,478	17,333,038	2,806,176	414,736	....	3,087	3,604	....	517	....
Total inc. or dec.	.....	.....	1,581	...	32.9	.....	.....	2,391,440	.....	13.8	.....	.....	....	517	14.4
SOUTHWESTERN ROADS.															
Ft. Worth & Den.	110	110	....	....	....	355,212	268,581	86,631	.....	32.2	3,229	2,442	787	...	32.2
Gulf, Col. & S. F.	536	515	21	....	4.1	1,253,452	1,428,456	.....	175,004	12 3	2,339	2,774	....	435	15.9
Houst., E. & W. Tex.	140	120	20	....	16.7	194,486	228.909	.....	34,423	15.0	1,389	1,908	....	519	27.3
K. C., Ft. S. & Gulf	389	389	....	....	....	1,734,637	1,377,982	356,655	.....	26.0	4,459	3,542	917	....	26.0
Little R. & Ft. S.	168	168	....	....	....	355,173	357,240	.....	2,067	0.6	2,114	2,126	....	12	0.6
L. R., Miss. R. & T.	173	173	....	....	....	227,477	261,675	.....	34,198	13.1	1,315	1,512	....	197	13.1
St. L., Ft. S. & W.	165	135	30	....	22.2	353,951	172,651	181,300	.....	104.8	2,145	1,279	866	....	67.7
St. L. & San Fran.	761	733	28	....	3.8	3,374,277	2,723,088	651,189	.....	23.9	4 434	3,715	719	....	19.4
Vicks., Sh. & Pac.	131	73	58	....	79.5	734.210	70,405	63,805	.....	90.6	1,025	964	61	....	6.3
Total, 9 roads	2,573	2,416	157	....	....	7,982,875	6,888,987	1,339,580	245,692	....	3,103	2,851	252	....	....
Total inc. or dec.	.....	.....	157	....	6.5	.....	.....	1,093,888	.....	15.9	.....	.....	252		8.8
FAR WESTERN AND PACIFIC ROADS.															
Central Pacific	3,003	3,007	....	4	0.1	16,678,164	18,275,232	.....	1,507,068	8.7	5,554	6,077	....	523	8.6
Utah Central	280	280	....	....	....	756,212	857,872	.....	101,660	11.9	2,701	3,064	..	363	11 9
Total, 2 roads	3,283	3,287	....	4	....	17,434,376	19,133,104	.....	1,608.728	....	5,311	5,821	....	510	....
Total inc. or dec.	.....	.....	...	4	0.1	.....	.....	.....	1,698,728	8.9	.....	.....	....	510	8.8
GRAND TOTAL:															
Total, 78 roads	51,145	47,670	3,479	4	....	242,494,890	244,741,934	8,589,646	10,836,630	....	4,741	5,134	....	393	....
Total inc. or dec.	.....	.....	3,475	....	7.3	.....	.....	.....	2,247,044	0.9	.....	.....	....	393	7.7

* Includes all lines east of Pittsburgh and Erie.
† Includes New Jersey Central for eight months in 1884, but for four months only in 1883.
‡ Includes Florida Transit and Florida Central lines.
§ Includes Illinois lines and Southern Division.

RAILROAD GAZETTE

Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE CHICAGO & ATLANTIC.

The Chicago & Atlantic Railway, less than a year and a half after it was opened for through traffic, makes default in paying the November coupon of its first-mortgage bonds, which amount to $6,500,000, issued on 2,491 miles of railroad, and therefore at the rate of $26,100 per mile. This road, built to give the Erie a line into Chicago under its own control, cost much more than the builders of it estimated, and within the past year $2,500,000 of second-mortgage bonds have been issued to meet the excess of cost. But the $540,000 of interest is not the whole charge which the road has to bear, for it leases an entrance into Chicago over the Western Indiana road, for which last year the rental was $170,888. It is thus burdened with a yearly fixed charge of about $2,680 per mile, instead of the $1,500 which at first was given as all that the road would have to bear.

All the new Chicago railroads pay a large sum for the rent of a Chicago entrance and terminus. Their funded debts would have been much larger if they had provided such an entrance for themselves; indeed, it is doubtful if they could have been built at all if this had been necessary, and it certainly was cheaper for five railroads to unite to pay the interest on the heavy cost of a city line than for each to make its own. Nevertheless, the fact that the charge for this entrance is in the form of a rental instead of interest has made the capital accounts of these roads appear very light, and the bonds more secure than they really are. When the Chicago & Atlantic bonds were sold, it was understood that the whole fixed charge to be met from net earnings would be only $1,500 a mile. But the railroad stops 19 miles short of Chicago, and for the entrance and the terminus the company pays at the rate of $636 per mile *of the whole* 268½ *miles of road*—increasing the supposed fixed charge no less than 42 per cent., besides which was the excess of the cost of the railroad over the estimates. The case is similar to that of the West Shore. While the latter was under construction it was widely advertised that the company would have to pay only the interest on the $50,000,000 of first-mortgage bonds, and the ridiculous ease with which this could be done was shown by citing the net earnings of the New York Central Railroad, which had varied from $8,000,000 to $13,000,000 per year for the last 14 years. But when, just before the road was done, it was announced that a mortgage of $12,000,000 had been authorized on the terminal property at and opposite New York, and that this terminus was not owned by the railroad company, but leased from another company, it was seen that a serious addition to the West Shore's fixed charges might be made in spite of its first and only mortgage of $50,000,000.

The first-mortgage bonds of the Chicago & Atlantic Railway enjoy a "traffic guarantee" from the Erie and the New York, Pennsylvania & Ohio which is of a more substantial nature than most traffic guarantees have been, the chief use of them heretofore, apparently, having been to decoy money from investors. The guarantee is of a more substantial nature in this case, because it pledges the gross earnings of the two roads from the traffic interchanged to make good any deficiency in the net earnings of the Chicago & Atlantic, because most of the traffic of the Chicago & Atlantic is interchanged with one or both of them, and because the two guarantors earn about three times as much from the interchanged traffic, when it goes all the way through between New York and Chicago, as the Chicago & Atlantic itself. Now, even if only one-half of the latter road's earnings last year were from interchanged traffic, namely, $723,800, then the other two roads probably made as much as $1,500,000 of gross earnings from it (allowing for a large amount of traffic not going all the way between Chicago and New York), all of which is pledged to make good the interest on the first-mortgage bonds of the Chicago & Atlantic, which amounts to but $390,000 per year. Thus the traffic guarantee in this case is amply sufficient, so far as the amount pledged is concerned, the only trouble being that the Erie hasn't any money just now to make good its guarantee.

The Chicago & Atlantic Company has reported for the fiscal year ending with June last (which began with the date of the full opening of the road for all business) to the Ohio Railroad Commissioner. The report shows the gross earnings to have been $1,447,718, or $5,390 per mile, which is a very respectable amount, and much more than many old and prosperous railroads get: but the working expenses were no less than $1,368,817, or 94½ per cent. of the earnings, so that the net earnings were but $78,896, or $294 per mile—not one-fifth of the interest on the first-mortgage bonds, not to say the seconds. For some three months after it was opened this road had a very large share of the shipments out of Chicago, and on the whole it has had quite as large a share of the traffic as could reasonably be expected. But the very large shipments of the early months were got by rebates of some kind, the natural effect of which was demoralized rates all winter and a 15-cent rate for three months until July, at which rate this road probably could not make one cent of net earnings. Indeed, seeing what these net earnings were, that the road was new at the time and could have required no renewals, and that the rates and traffic were both largest in the first half of the year, it is not easy to believe that the road made any profit after December last. That this was due to low rates is sufficiently shown by the very large proportion of expenses. The road was claimed to be a very cheap one to work, and reasonable rates would certainly have left a margin of more than 4½ per cent. of the gross earnings over the working expenses. When we have the report of the traffic we shall know more definitely, but it will probably be found that the receipt per ton per mile was painfully small. If the working expenses had been no more than two-thirds of the earnings, the net earnings would have been $482,500, instead of $78,896, and would have sufficed to pay the interest on the first-mortgage bonds, but not the whole of the rental charge for the use of the Chicago & Western Indiana, by which the Chicago & Atlantic enters Chicago.

It is not by any means a new thing for a new road to Chicago to fail to earn interest on its cost for a time; but in this case the Erie had so large an established business at Chicago, that it seemed reasonable to suppose that it would do better than the Baltimore & Ohio, for instance, which had to establish its business there chiefly after its road was built, or the Chicago & Grand Trunk, which had never had so large a proportion of the Chicago business. And it is altogether probable that if rates had been maintained, notwithstanding the dulness of business, the Chicago & Atlantic would have earned at least the interest on its first-mortgage bonds in this first year. The Baltimore & Ohio's Chicago Division, which is of just the same length as the Chicago & Atlantic, and similarly situated for local traffic (having no large towns on it), but less favorably for through traffic, as it does not make part of a direct route to New York or New England, did not earn its expenses in the first year of its working, and did not until its sixth year have as large gross earnings as the Chicago & Atlantic in its first. It will throw some light on the matter to examine the earnings of the Chicago Division of the Baltimore & Ohio for each year since it was opened, as follows:

Year.	Gross earnings.	Expenses.	Net earnings.
1874-75	$959,164	$1,160,332	$210,168 (Deficit.)
1875-76	1,231,786	1,065,083	166,703
1876-77	957,696	834,415	123,280
1877-78	1,057,559	628,011	429,548
1878-79	1,153,852	659,321	494 531
1879-80	1,548.994	982,320	566 674
1880-81	1,638,663	1,185,592	453,070
1881-82	1,692,006	1,245,599	446 407
1882-83	1,878,167	1,304,664	573.503

The reported cost of this Chicago Division is $12,827,445, more than one-third of which is represented by a debt of the Baltimore & Ohio & Chicago Company to the Baltimore & Ohio for advances, and $8,000,000 bonds. There has been as yet no year in which the net earnings have equaled 5 per cent. on the whole cost of the railroad, and but two in which they were enough to meet the whole interest ($480,000) on the company's funded debt, which is all owned by the Baltimore & Ohio, which has issued its own 5s to pay for these 6s, so that to it the yearly interest charge is but $400,000. But for nearly all the unfunded part of the cost of the road, more than $4,000,000, it goes without interest yet.

The Chicago & Grand Trunk, which is 335 miles long, against the 268½ of the Chicago & Atlantic, has a funded debt of $12,000,000, half of which bears 5 and half 6 per cent. interest, so that the yearly interest charge is $660,000. This has grown from year to year to these figures. It pays a rental of more than $100,000 per year, chiefly to the Western Indiana for its extension into Chicago. Its net and gross earnings have been:

	1880.	1881.	1882.	1883.
Gross earnings	$1,383,634	$1,631,751	$2,271,087	$2,976,561
Expenses	1,159,860	1,432,025	1,801,442	2,201.547
Net earnings	$223,774	$199,726	$469,645	$775,014

Thus this road in its fourth year made larger net earnings than the Baltimore & Ohio & Chicago has ever made, yet only about enough to pay its interest and rental charges, though its gross earnings then were the large amount of $9,000 per mile. In most cases we find that but a small proportion of the earnings are profit, the proportion of expenses being much greater than on most railroads. On the Chicago & Grand Trunk the expenses have been from 74 to 88 per cent., and on the Chicago Division of the Baltimore & Ohio they were 122 per cent. the first year, and for the last three years have been 72, 74 and 70 per cent.—all, doubtless, due to the fact that the traffic is chiefly through, and that the rates leave but a narrow margin of profit when they leave any.

REAR COLLISIONS.

There is no crop raised in this country which can be relied upon with an assurance at all to be compared with the certainty that the next few months will be prolific in what are known to railroad men as "tail-enders." We always have a plenty of them every month; but as traffic grows larger and the weather grows colder there are more reasons for the stopping of trains, and we shall have more of them. Seventeen out of the 26 rear collisions which were reported for September, in our number for Oct. 31, belonged strictly to this class; that is, one train stood on the main track and the following one ran squarely into it; and we know that we have reports of only a few of the more destructive of these occurrences. Many such which might have been serious, but by good luck were not so, as when the following train has stopped just short of the preceding one, or has only knocked the platform off the caboose, do not come to the knowledge of the newspapers, nor, in many cases, even to that of the officers of the railroad on which they take place.

We have been accustomed to classify these collisions in the list of "accidents," because that is a convenient place in which to take account of them. To call them such is a mistaken use of language, for accidents are events which happen by chance, and there can scarcely be said to be any chance about rear collisions.

Nothing could be more deliberately prepared beforehand than these collisions are, not by intention, we know, but nevertheless in fact. No matter how foggy or stormy it may be, the traffic of a railroad must continue. So one heavy, almost unmanageable freight train is sent out, to be followed by a passenger train or by another freight train equally heavy and unmanageable, that train by another, and so following so long as there are cars to go. There is no communication between these trains. The men on the following train do not know where the preceding train may be unless they discover its rear lights. The men on the forward train do not know where the following one is until they see its headlight. They know that they started ten or fifteen minutes apart as the rules required, but what the subsequent course of either has been must be totally unknown to the other.

The superintendent believes they will run through all right, because he has put a rule on the back of his time-table requiring them to run carefully, and also insisting that if anything happens to the forward train, the rear brakeman must go back with a flag or lamp to signal the following train to stop.

Now, if the brakeman starts to go back soon enough after the forward train has begun to stop, and if he gets back far enough, and if the following train is going slow enough. and if the grades are not too steep,

or if the rails are not too slippery, or if the brakes on some of the cars are not in bad order, or if the brakemen on the rear train are not all in the caboose with the conductor, or if some one of many more probabilities does not prevent, the following train may be stopped in time not to plunge into the preceding one; but we believe a mathematical calculation of the probability, in which all the chances should be taken into account, would demonstrate that there is more reason to expect a rear collision than not.

Experience in every country where railroads are in use has shown that brakemen do not, in practice, succeed in flagging trains so as to insure safety. We may talk about discipline, and argue that men properly trained will do so; we can then look these facts in the face, and see that no one has succeeded yet in this attempt in protecting trains. In case of a rear collision, when the flag has been proved not to have been far enough back, or it is shown that the following train was running too fast, the conductor will always assert, and no doubt truly, that the brakeman who failed was his best man; and the engineer at fault will prove to have been thought the most careful runner on the road.

It is in the common experience of every superintendent, we believe, that these best men, as well as the worst, fail just at the moment when it is most fatal.

Our railroads have been trying this experiment now for nearly sixty years, only to prove by each year's melancholy results that when flagging is depended upon there is no other word than FAIL.

Yet, it is not a difficult nor a costly thing to eliminate these occurrences almost entirely from the list of catastrophes; it is only necessary to establish positively a space between the trains, which may be done in a simple manner by a small addition to the means now at hand upon most railroads. It has generally been assumed that the adoption of a block system must cause a large increase in expenses, which is not the case, except where a great traffic is to be provided for. The use of the telegraph is so perfected, and operators capable of acting as agents at small stations are so easily obtained now, that every station may be and ought to be a telegraph station; the distances between these telegraph stations should be constituted "blocks," which two trains should never be allowed to occupy at the same time; and the telegraph operators should have added to their other duties that of working the block-signals, by which one train following another should be held until the preceding train shall have been reported arrived at the next station.

The signal used may be only a red lantern set in a conspicuous place in front of the station; it will save disasters, if properly attended to; but the proper and a satisfactory way, on roads of moderate traffic, is to erect a semaphore in front of each telegraph office and in view of the telegraph operator, to be conveniently governed by him from his seat at the telegraph table. The leading principle in regard to these semaphores is that they should always stand at danger, that is, with the arm extended and showing a red light at night, except when the block is clear and it is intended to allow a train to enter it. It may be necessary to increase the number of night operators upon some smaller roads, or to add to the number of telegraph stations near to the termini, where it is desirable to get trains closer together; yet, if this cannot at first seem to be advisable, on account of the expense, a calculation is not required to show that some delays can be borne for the sake of freedom from disaster, rather than to have them to endure because of rear collisions, with the consequent loss of property, perhaps of life, and with a certainty of the loss of reputation.

The success of the system here indicated is not hypothetical or problematical; it has been tried and found to answer its purpose perfectly when thoroughly carried out; and it is not creditable to our railroads that it is in use on so few lines in the United States.

September Earnings.

Our full table of railroad earnings in September, published this week, has reports from 79 railroads, whose aggregate mileage and earnings and average earnings per mile were:

	1884.	1883.	Inc. or Dec.	P.c.
Miles	52,304	50,124	+ 2,180	4.3
Earnings	$31,236,944	$33,337,693	− $2,100,749	6.3
Earnings per mile	597	665	− 68	10.2

The very large decrease of more than 10 per cent. in earnings per mile is similar to what we have reported heretofore for a smaller number of railroads.

We have heretofore considered the returns of some of the more important groups. Of those which have been incomplete heretofore, the Eastern, including 10 railroads east of Ohio and north of the Potomac, with an increase of 2½ per cent. in mileage, had a decrease of 7.1 per cent. in total earnings, and a decrease of 9.3 per cent. in earnings per mile. The Southern group east of the Mississippi, in which 21 railroads had 10,010 miles of road and 1.9 per cent. more than last year, had a decrease of 9.1 per cent. in total earnings and 10.7 per cent. in earnings per mile. The 19 roads north of the Ohio and east of the Chicago & Alton Railroad, with an increase of 0.6 per cent. in mileage, had the very large decrease of 12.8 per cent. in total earnings. The group southwest of St. Louis alone makes a favorable showing, and this because most of the Texas and Arkansas roads do not report, while those in Missouri and Eastern Kansas are actually having large earnings. All the Texas roads that report show decreases, varying from 10¼ to 27¾ per cent., which is a natural consequence of the very poor cotton crop there this year. The nine roads southwest of St. Louis that report have an increase of 6 9 per cent. in total earnings and of ¼ per cent. in average earnings per mile.

The average earnings per mile of the several groups in September were:

	1884.	1883.	Inc. or Dec.	P.c.
Far West	$721	$771	− $50	6 4
N. w. of St. Paul	402	444	− 42	9 5
W. and n. w. of Chicago	490	542	− 52	9 3
S. w. of St. Louis	403	401	+ 2	0.5
N. of the Ohio	525	606	− 81	13.4
S. of the Ohio	408	457	− 49	10 7
East of Ohio	1,245	1,373	− 128	9.3

It will be seen that there is everywhere a large decrease except on the railroads southwest of St. Louis in Missouri and Kansas, including but a very small part of the Kansas roads, and that in the other groups the decrease is greatest in the South east of the Mississippi, and least on the group of two—the Central Pacific and the Utah Central—in the Far West.

Still, there are 18 out of the 79 railroads that show some increase in earnings per mile. In some cases, as the Rochester & Pittsburgh, the New Orleans & Northeastern, the Vicksburg, Shreveport & Pacific, the Ohio Southern, the Toledo, Ann Arbor & North Michigan, the Central Iowa, the Minneapolis & St. Louis, and the Fort Scott & Wichita, the increase is due to the fact that the roads, or large parts of them, had been but lately opened last year, and had very light earnings, while their gains leave them with light earnings this year also. But the very large increase of 34 per cent. by the Boston, Hoosac Tunnel & Western, of 13 per cent. by the Long Island, of 18½ by the West Jersey, of 14½ by the Evansville & Terre Haute, and of 16¾ per cent. by the St. Louis & San Francisco are not to be explained in this way, but indicate that the roads were doing positively well last September.

There are some large decreases by Eastern roads, as 14½ by the Grand trunk, 12¾ by the Northern Central, and 13¾ by the Reading. In the South, east of the Mississippi, only two roads have an increase, and among large decreases are 16 per cent. by the Chesapeake & Ohio, 22½ by the Florida Railway & Navigation Co., 13¾ by the Louisville & Nashville, 14½ by the Mobile & Ohio, 17½ by the Charlotte, Columbia & Augusta, 21 by the Columbia & Greenville, and 17½ by the South Carolina. North of the Ohio three out of 21 gain, and among the others there are decreases of more than 15 per cent. by eight roads. Northwest of Chicago four roads have some increase, and five decreases of from 16 to 42 per cent.—the latter the Marquette & Ontonagon, whose earnings per mile fell off from $1,288 to $743, partly, however, because of new road added.

The gains or losses of the several groups in each of the four months, from June to September inclusive, give some indication of the tendency of earnings. These are shown below.

The Central Pacific, the only Far Western road that has reported regularly, has had decreases as follows:

April.	May.	June.	July.	August.	Sept.
$663,487	$65,420	$340,226	$192,216	$129,543	$158,348

The loss in September is a little greater than in August, but less than in any other of the six months except May. The great decreases in April and June were due to floods.

The four roads northwest of St. Paul have had gains and losses as follows:

April.	May.	June.	July.	August.	Sept.
$714,172 Gain.	$356,949 Gain.	$147,669 Gain.	$156,320 Gain.	$114,449 Loss.	$152,178 Gain.

The gain in September is not very large, but this is partly because the earnings were large last year, and it is a great improvement over August.

Thirteen roads northwest and west of Chicago have had increases and decreases as follows:

April.	May.	June.	July.	August.	Sept
$156,405 Gain.	$18,291 Loss.	$379,036 Loss.	$101,281 Loss.	$628,757 Loss.	$477,685 Loss.

The decrease in September was less than in August, but much larger than in earlier months. For most of these railroads September is the beginning of the new crop year, but though the crop on them is unusually large this year and has come forward freely, other circumstances have been so unfavorable as to more than offset this.

Southwest of St. Louis the reports of seven roads, and these not the most important, show the following gains:

April.	May.	June.	July.	August.	Sept.
$169,366	$165,412	$146 462	$150,693	$44,924	$66,152

These have gained every month, but less in September than in any other month except August.

Fourteen of the many roads north of the Ohio River, east of Pennsylvania and west of the Chicago & Alton Railroad have lost or gained as follows:

April.	May.	June.	July.	August.	Sept.
$102,567 Gain.	$32,493 Loss.	$234,410 Loss.	$117,057 Loss.	$410,161 Loss.	$430,603 Loss.

The losses have increased almost continuously, and were larger in September than in any previous month.

Twenty-one roads south of the Ohio and the Potomac and east of the Mississippi have reported as follows:

April.	May.	June.	July.	August.	Sept.
$443 315 Gain.	$122,792 Loss.	$60,171 Loss.	$129 866 Loss.	$337,092 Loss.	$409,927 Loss.

The losses are growing greater and greater, as might be expected, after two poor cotton crops. It should be remembered that at this time last year, in spite of the poor crops, most of the Southern roads were showing gains.

Ten railroads east of the Ohio and north of the Potomac make the following losses:

June.	July.	August.	September.
$1,159,859	$875.716	$534,379	$787,833

For April and May the comparisons are vitiated for lack of the Central of New Jersey earnings last year. Aside from the Reading, there was a very small decrease in both months. The very large decrease in June was chiefly on the Reading, there having been a suspension of coal mining and shipments for a large part of that month. From July to September the losses have been growing greater.

Thus generally we find a very considerable increase in losses or decrease in gains since April last, and generally September was less favorable than previous months. Exceptions to this are the railroads west of Chicago, St. Paul and St. Louis, which show some improvement, compared with August, in September.

Our readers will thank us for calling their attention to the series of papers on "The Elements of Railroading," by Mr. Charles Paine, Past President of the American Society of Civil Engineers, formerly General Superintendent of the Lake Shore road, and more recently General Manager of the West Shore. The first of these papers appears in this number of the *Railroad Gazette.*

East-bound rates are somewhat demoralized again, and a meeting of the Joint Executive Committee has been called to endeavor to put an end to the troubles. There seems to be absolutely no differences to settle. All the questions at issue are now undergoing arbitration, but there is a good deal of distrust.

The passenger fares from New York to the West have been further reduced during the past week, as the result, apparently, of an attempt of the New York Central to prevent "differentials." The allowance to the weaker lines of $1.50 from the $20 rate from New York to Chicago, it is argued, was yielded in pursuance of an agreement by which rates were to be maintained and commissions were not to be paid to brokers. When these latter parts of the agreement are not kept, the New York Central claims the right to sell tickets as low as any one. But the West Shore and other roads desire to maintain the $1.50 difference, and when the Central has cut off the amount from its tickets they have followed with an equal or nearly equal reduction, so that at this writing the New York Central fare to Chicago is $13, and by the differential fare routes about $12.

The brokers are very much dissatisfied with the present condition of things; the reductions have cut off the greater part of their commissions. It is intimated that none but the Erie pays any commission, and it only a dollar.

October earnings have been reported by several railroads already, and especially by those which carry the spring wheat of the country northwest of Chicago, the movement of which is likely to be at its height in October. The Canadian Pacific shows a gain of $132,000 (20 per cent.), which is a little less than its gain in September; yet its earnings were much larger in October than ever before. The St. Paul & Manitoba gained $91,508 (10 per cent.), against a *loss* of $39,000 in September. These also are the largest earnings the road has ever had in a single month, and are decidedly favorable, the increase in mileage over last year being very small. The Northern Pacific also has a gain of $64,149 (4½ per cent.), which is over the largest earnings the road has ever

had except in April last, and with very little increase in mileage, instead of a large one, as in months previous to September, in which last-named month its gain was less than in October. The Chicago, Milwaukee & St. Paul, on the other hand, shows the trifling increase of $7,782 in October, while in September it had a decrease of nearly $20,000. The Chicago & Northwestern's great decrease of $334,300 (12 per cent.) is a little less than its decrease in September. The Chicago & Alton has the small decrease of $12,913—less than heretofore; the Central Iowa, much of which was new last year, gained no less than 18 per cent., and yet had very light earnings ($808 per mile).

The gross earnings, gains and losses of these roads, compared with last year, for four months past have been:

	October.	September.	August.	July.
Can. Pac	$751,000	$632,000	$585,000	$560.000
	+ 122,000	+ 138,000	— 6.000	+ 12,000
Manitoba	1,008,389	738,500	564.421	602,011
	+ 91,508	— 39,304	— 65,192	— 10,755
North Pac.	1,461,371	1,236,565	1,016,896	1,026,449
	+ 64,149	+ 41,851	— 26,728	+ 176,226
Mil. & St. P.	2,539,000	2,201,000	1,826,000	1,956.000
	+ 7,872	— 19,684	— 25.209	+ 120,715
Chic. & N. W.	2,459.600	2,289.000	1,999.700	1,962,300
	— 334,300	— 358,968	— 403,759	— 198,351
Chic. & Alton	888.740	882,553	859,083	724,619
	— 12,913	— 52,388	— 27,473	— 6.884
Cen. Iowa	154,033	148,990	119,822	96,322
	+ 23,192	+ 33,539	— 511	— 4,650

These figures, and especially the gains and losses, are instructive. It appears from these that the roads northwest of St. Paul have made a substantial improvement since the wheat harvest and are doing better than ever before. Of the two great systems next south, which have a great mileage in Dakota and Minnesota, as well as in Iowa, Wisconsin and Northern Illinois, the Milwaukee & St. Paul shows very slight improvement since harvest, up to which time this year its earnings had been nearly the same as last year (a decrease of 1.1 per cent. for the seven months ending with July); while the Northwestern, which down to the end of June had a decrease of only 2.9 per cent., has had a large decrease in every month since, amounting for the four months to $1,295,358, which is nearly 13 per cent. Its rate of decrease is a little less in October than in August or July.

The Chicago & Alton, the only road reporting which extends southwestward from Chicago, and so reaches the winter wheat country, has a much smaller loss in October than in either of the two months previous, and as the earnings last year were considerably larger than in any other October, they must be looked upon as very favorable this year, especially when we consider that the passenger rate from Chicago to Missouri River points during most of the month was only $1.

The Chicago railroads have been indulging in one of their periodical wars on lumber rates to Missouri River points—a war which seems to break out once or twice every year, not quite regularly, but at intervals so short that it seems strange that the Western lumber merchants should ever pay regular rates for their lumber. A comparatively small difference in the rate may be equal to the average yardman's profit on lumber. The last regular rate was 18 cents per 100 lbs. from Chicago to Missouri River points, which is probably more than $5 per 1,000 ft. on most lumber, a very large part of which costs no more than $10 or $12 per 1,000 ft. in Chicago. For some two weeks the rate was down to 10 cents, and early last week it was put down to 5 cents, which is the lowest ever known, and just about equivalent to a 10-cent rate from New York to Chicago. This is substantially all money thrown away, for the increase in shipments on account of the reduction cannot be very great, as the lumber is not diverted from a water route, as grain is from the Erie Canal when grain rates are very low. Shipments are increased for the time by those who wish to take advantage of the low rate to lay in stocks, but they are decreased correspondingly afterward.

One of the effects of the reduction to 5 cents is the abolition of the differences between the rates from Chicago and those from upper and lower Mississippi River points, as the rate now is lower than the agreed difference at some places, and when it is 5 cents from Chicago the railroads are not able to make it 6½ cents lower from St. Louis. Practically, we believe that the rate is made 5 cents from all points.

The origin of this break in rates we have not seen explained. There was, we believe, no great dissatisfaction with the differentials agreed upon, on the part of the railroads, though the lumbermen of Northwestern Wisconsin and of Minnesota complained a great deal that they were put at a disadvantage. After an investigation by the Commissioner of the railroads, however, it is said that the lumbermen themselves were opposed to a change. The conflict most probably is due to the conviction that some railroad was habitually cutting the rates from Minneapolis or West Wisconsin. Lumber is the great west-bound traffic of the railroads from Chicago to the West, and to carry it for so much less than cost must make a serious inroad into their net earnings.

Gen. Adna Anderson, Chief Engineer of the Northern Pacific Railroad, has published a letter to Mr. Villard, in which he replies to some statements in the letter of Mr. Villard to his late associates in the Northern Pacific, etc., which we published a few weeks ago. It will be remembered that Mr. Villard gave as the chief cause of the misfortunes of himself and his fellow investors, the unexpectedly high cost of the road. To show that it was unexpected, and that therefore he was justified in expecting to complete the road from the proceeds of the first-mortgage bonds, Mr. Villard cited what he called estimates of the cost of the road made at different times by the Chief Engineer, the first and second of which were many millions less than the actual cost of the road. General Anderson's letter is devoted to showing what his estimates actually were, and what was the actual cost of those parts of the work for which his estimates were made. We shall hereafter give a fuller account of it. At this time we can only say that Mr. Anderson affirms that the estimates of cost which he made and which were so much less than the actual cost of the whole road, were not estimates for the whole but only part of the work, and plainly showed that they were; that such parts of the work then estimated for as were executed under his own charge, cost very little more and in some cases less than the estimates; and that the only one which considerably exceeded the estimate was taken from Mr. Anderson's charge during construction and constructed under the direction of another person who was appointed by and reported directly to Mr. Villard himself.

The statisticians of the French Department of Public Works have collected and compiled statistics of the railroads of Europe, showing that, at the end of 1883, there were 113,781 miles of them, and that during the year 3,064 miles of new railroads were opened. In the United States there were, according to Poor's Manual, 120,552 miles of railroad at the end of last year, and the additions during the year measured 6,754 miles. It was during the year 1882, when we built 11,600 miles of railroad, and Europe 3,467 miles, that we passed Europe. At the beginning of that year we had 103,242 miles, and Europe 107,250. We have greatly reduced our rate of new construction since, but we are still building more than all Europe, and more probably than Europe has ever built, in any year since 1874, at least. Our increase this year will probably be nearer 4 than 3 per cent., though the increase in population is probably less than 3 per cent., and we all know that we have been building too many railroads of late years. We shall probably leave Europe further and further behind as years pass on.

An interesting innovation in time cards has been introduced by Mr. F. W. Smith, General Superintendent of the Atlantic & Pacific Railroad, which consists in showing the profile of the road to a small scale upon the back of the time card, and also adding a scale to each time card giving the ruling grades between stations. The innovation would have been equally useful and perhaps more concise had the ruling grades been shown more clearly in figures upon the profile, but it ought to prove valuable to train-men, and, as claimed by Mr. Smith, it costs little to give them the information. If the practice could only be generally adopted, it would at least make the time sheets more interesting reading, and would perpetuate information which is now often entirely lost. It is surprising how many roads there are which ten years after construction have no authentic profiles of their line, and that which the profile does not give, but which would be interesting to know, is the grades at the stations as well as between them. As a general rule, especially on Western railroads, the grades at the stations on which the trains have to stop and start are in fact the limiting gradients instead of those between them. But such information could hardly have been conveyed in so small a space.

The Pennsylvania Railroad Dividend.

The Pennsylvania Railroad Company follows the fashion and reduces its dividend, making it 3 per cent. instead of 4 or 4½ as heretofore. It takes about $950,000 to pay 1 per cent. on the stock as it stands now, but the profits of the company for the nine months ending with September were $2,078,000 less than last year, so that the reason for reducing the dividend is obvious. An effect of it may be that the company will not be able to raise large sums for additions to its property by new issues of stock to the shareholders as it has been doing for some time, because they will be less ready to take them when the dividends are smaller and the stock perhaps below par.

Perhaps some, seeing the enormous surplus over dividends earned by this company in some recent years, have been led to believe that it is an unusually stable stock—less likely than most others to have its dividends reduced. We may almost say that the contrary is the case. The company leases an enormous system of railroads at rentals in some cases fixed, but in nearly all cases fluctuating much less than the net earnings of the roads. It may be taken for granted that the owners of these roads did not contract for a rental which they thought would be much less than the average profits of the road; but if the rental approximates the average net earnings, it must be much above these net earnings in unfavorable years, as well as much below them in favorable years—that is, the Pennsylvania Railroad Company makes a large profit on the lease when times are good and is liable to large losses when times are bad. Times are not good now, and as we showed last week, its western system of roads which during the nine months ending with September for the last five years had yielded a profit, amounting to $2,096,000 in 1880, $2,269,000 in 1881, $1,068.000 in 1882, and even $894,000 last year, netted a loss of $650,000 this year. Moreover, the Pennsylvania Railroad Company owns $83,000,000 of the stock and $42,000,000 of the bonds of other railroads, which have cost it $95,000,000. The interest and dividends from these investments form a very important part of its income, amounting last year to more than $4,000,000. These other railroads have smaller profits in bad than in good times, and many of them, doubtless, will pay smaller dividends. In fact, though the direct funded debt of the Pennsylvania Railroad Company is comparatively small, requiring less than one-fifth of its net earnings to pay the interest, it is liable for rentals, etc., for so large an amount of the interest of other railroads, and its income is to so great an extent dependent on their profits above fixed charges, that the amount available for the payment of dividends may fluctuate greatly. It has fluctuated greatly, as follows:

Year.		Year.	
1878	$4,321.063	1881	$8,060,983
1879	4,896,351	1882	8,514,520
1880	7,638,569	1883	9,552,646

The property certainly has been greatly added to since the first of these years, but so has the capital stock. Down to the opening of 1881 the share capital was $68,870,300; it has been increased every year since to raise money for additions to the property (the chief being the stock of the Philadelphia, Wilmington & Baltimore Railroad), until now it is about $95,000,000. Before 1881, a profit amounting to $5,510,000 would pay an 8 per cent dividend; now it requires $7,800,000 to pay the same dividend. It is very greatly to the advantage of the company, however, that the large and necessary increase of capital has been made without increasing its fixed charges, or with very little increase of them. Now, if capital must be raised in hard times, it will doubtless be able to borrow on easy terms; if the $27,000,000 of new capital had been bonds, instead of stock, it might have had a hard time getting any more capital when profits fell off.

The dividends of this company were 5 per cent. every half, year for 6½ years ending with November, 1874. In 1875 a half-yearly dividend of 4 per cent. and two quarterly dividends of 2 per cent. were paid, and it was then announced that dividends would be paid quarterly thereafter. They were so paid, 2 per cent. quarterly, through 1876; but the lack of profits to divide interfered with this arrangement afterward, and after paying 2 per cent. in the first quarter and 2½ in the second quarter of 1877, dividends were passed for a year and a half, and only 2 per cent. was paid in the whole year 1878, in November. Since that time dividends have been half-yearly—2 and 2½ in 1879, 3 and 4 in 1880, 4 and 4 in 1881, 4 and 4½ in 1882, 4 and 4½ in 1883 and now 4 and 3 this year.

We published last week a paragraph copied from *Engineering* (London) on a cantilever bridge on the Canadian Pacific. The paragraph, though perfectly correct as far as it went, might lead one to imagine that the designer of the bridge in question, that across the Fraser River, was the first to introduce the cantilever principle, and that he specially anticipated the engineer who designed the somewhat similar Michigan Central Niagara Falls bridge, which has been illustrated and described in these pages.* Both bridges were, however, designed by Mr. C. C. Schneider, of New York. The design of the Fraser River Bridge was, however, completed nearly twelve months before that of the Niagara Bridge, but owing to delays in shipment of the former bridge, and the unprecedented progress made with the latter, the Niagara Falls Bridge was completed first, and therefore to an outside observer would appear to be the first bridge of its kind.

An elementary form of cantilever bridge was illustrated in the *Railroad Gazette* as far back as Oct. 8, 1870, and even then the idea of a cantilever was not new. The credit of a new idea, however, belongs really to the engineer who first carries it successfully into practice.

Chicago through and local shipments eastward of flour, grain and provisions, for the week ending Nov. 1, by the incomplete report to the Board of Trade, have been for four years:

1881.	1882.	1883.	1884.
45.793	31,052	45,005	47,137

The shipments this year, therefore, were larger than in

* See *Railroad Gazette*, March 7, 14 and 21, 1884.

any of the others—larger even than during the railroad war of 1881, but only a little, and only 4¾ per cent. more than last year.

For six successive weeks the tons shipped and the percentage going by each road have been :

	Week ending					
Tons :	Sept. 27.	Oct. 4.	Oct. 11.	Oct. 18.	Oct. 25.	Nov. 1.
Flour	5,596	7,186	9,403	7,612	7,585	6,943
Grain	26,514	33,592	36,235	22,370	23,870	31,370
Provisions	8,379	8,636	10,032	6,795	7,610	8,824
Total	40,516	49,414	55,640	36,777	39,068	47,137
Per cent :						
C. & Grand T.	6.6	2.8	3.7	5 8	7.6	6.9
Mich. Cen.	17.0	19 6	15.3	17.9	20.7	23.1
Lake Shore	15.5	17.2	26.0	24.2	17.1	14.3
Nickel Plate	7.7	11.8	12.3	9.6	9.0	7.7
Ft. Wayne	17.3	15.6	12.8	18.6	14.0	13.4
C., St. L. & P.	16.6	16.9	11.5	11.0	14.0	13.4
Balt. & Ohio	8.0	9.4	7.9	5.8	6.9	8.5
Ch. & Atlantic	11.3	6.7	10.5	7.1	10.7	12.7
Total	100.00	100.00	100.00	100.00	100.00	100.00

Thus the total shipments last week were 20 per cent. more than the week before, and still larger than the other week since rates were restored. There has probably been more cutting of rates than the week before, if not the shipments are very large. The increase over the previous week was chiefly in grain, the shipments of which were exceptionally large. This was due, probably, to exceptionally large corn shipments, which, being for interior consumption chiefly, do not go forward by lake.

The percentages are not greatly different from those of the previous week, the chief difference being an increase on the Michigan Central at the expense of the Lake Shore, the three Vanderbilt roads together having 45.1 per cent. of the whole, against 46.8 the week before.

The Chicago & Grand Trunk again gets a large share of the provision shipments, 21 per cent. of the whole, against 22 per cent. on the Chicago, St. Louis & Pittsbugh, 20 on the Fort Wayne, and 17 per cent. on the Lake Shore. The great shipments of corn are unfavorable to the Grand Trunk, as they are not for export, and it does not carry as much for interior consumption as most of the other railroads.

The wheat receipts of the Northwestern markets are larger in the week to Oct. 25 than in any previous week of this year, and very much larger than in the corresponding week after the great crops of 1882. The increase in recent weeks has been at Chicago chiefly, but the receipts remain very large at Duluth and Milwaukee, and are fully maintained at St. Louis, while they have fallen off materially at Toledo and Detroit. Three weeks before the two places last-named received 1,719,207 bushels of wheat, or 43.4 per cent. of the total Northwestern receipts, while Chicago, Milwaukee and Duluth received 1,802,587 bushels (45.3 per cent.). In the week to Oct. 25, Chicago, Milwaukee and Duluth received 2,494,803 bushels (61.4 per cent. of the whole), while Toledo and Detroit received but 1,083,035 (25.7 per cent.). It is the latter movement that is more nearly regular. This indicates that the receipts from the winter-wheat country are falling off and those from the spring-wheat country, which is all west and northwest of Chicago, are increasing.

This is further indicated by the wheat receipts at Atlantic ports, which have increased at New York and Montreal and fallen off largely at Philadelphia and Baltimore. At the last named places they were largest about the end of July and the first of August, for the three weeks ending Aug. 9 averaging 1,484,757 bushels and 43.3 per cent. of the whole Atlantic receipts, against 1,418,371 bushels and 41.4 per cent. at New York. This was before the new spring wheat was harvested, not to say threshed. From that time receipts at Philadelphia and Baltimore decreased more rapidly than at New York, and in the fourth week of September were but 627,310 bushels and 26.1 per cent., against 1,365,110 bushels and 56.8 per cent. at New York, while in this week to Oct. 25 they had fallen to 335,350 bushels (12.0 per cent.) at Philadelphia and Baltimore and risen to 2,054,107 bushels (73.8 per cent.) at New York. Putting the figures side by side we have :

	Bushels			P. c. of total		
	Baltimore.	Phila.	N. Y.	Balt.	Phila.	N. Y.
Av. of 3 weeks to Aug. 9.	1,075,390	409,367	1,418,371	31.4	11.9	41.4
Week to Sept. 27	455,604	171,706	1,365,110	19.0	7.1	56.8
" " Oct. 25.	286,390	48,960	2,054,107	10.3	1.8	73.8

In the first of these periods Philadelphia and Baltimore received more than New York; in the September week not quite half as much, and in the October week only one-sixth as much. The early shipments came from the Ohio Valley and the states immediately west, and the Philadelphia and Baltimore railroads largely occupy this valley with their own lines. Apparently this country has either marketed its surplus already (which is quite possible, as the surplus east of the Mississippi is not large), or is holding what there is left for better prices.

Newport News which, in the last half of July, became noticeable as a wheat receiving port, and in two weeks received 304,000 bushels, ranking only a little behind Montreal, and far ahead of Boston and New Orleans, seems to have gone out of the grain business since August. In the two weeks ending Aug. 2 it received 304,594 bushels; in the *four* weeks ending Aug. 30, 419,777 bushels; in the next four weeks (ending Sept. 27), 89,647 bushels, and in the last of these 3,205 bushels. During the next four weeks no receipts at all are reported there.

Record of New Railroad Construction.

Information of the laying of track on new railroads is given in the present number of the *Railroad Gazette* as follows :

Batesville & Brinkley.—Extended from Riverside, Ark., north to Tupelo, 7 miles. Gauge, 3 ft.

Burlington, Cedar Rapids & Northern.—Track on the *Dakota Extension* is extended from Luverne, Minn., northward to Pipestone, 24 miles.

California & Nevada.—Track laid from Oakland, Cal., east 17 miles. Gauge, 3 ft.

East Broad Top.—Track is laid on a new branch from Orbisonia, Pa., south to Shade Gap, 6 miles. Gauge, 3 ft.

Kansas & Gulf Short Line.—Extended southward to Forest, Tex., 7 miles. Gauge, 3 ft.

Milwaukee, Lake Shore & Western.—Extended from Wakefield, Mich., west by north to Bessemer, 5 miles.

Nashville, Chattanooga & St. Louis.—The *McMinnsville Branch* is extended from Doyle, Tenn., northeast to Sparta, 7 miles. Gauge, 5 ft.

Raleigh & Augusta Air Line.—Extended from Hamlet, N. C., south to Gibson, S. C., 10 miles.

St. Louis & San Francisco.—Track on the *Bolivar Branch* is extended from Wishart, Mo., north to Bolivar, 9 miles.

Walden's Ridge.—Extended to Winter's Gap, Tenn., 10 miles. Gauge, 5 ft.

Wisconsin, Minnesota & Pacific.—Extended from near Madison, Minn., westward to Watertown, Dak., 50 miles.

Wrightsville & Tennille.—Track laid from Tennille, Ga., southward 10 miles. Gauge, 5 ft.

This is a total of 162 miles of new railroad, making 3,192 miles reported to date for the current year. The total track reported laid to the corresponding date for 13 years past is as follows :

	Miles.		Miles.
1884	3,192	1877	1,867
1883	5,279	1876	1,931
1882	8,731	1875	1,128
1881	6,008	1874	1,594
1880	4,946	1873	3,288
1879	2,987	1872	6,106
1878	1,777		

These statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

The considerable new mileage given this week does not indicate any increase in construction. It merely shows the completion of a number of short branches and sections of roads, which it is impossible to record mile by mile each week, but which are noted when they are finished, or when any considerable advance is made.

NEW PUBLICATIONS.

The Electrician's Pocket Book, translated from Hospitallier's *Formulaire Pratique de l'Electricien* by Gordon Wigan, M. A. Published by Cassell & Co., New York.

This is a very neatly got up little work, well printed, and clearly illustrated. In concise language it gives definitions, explanations and descriptions of most of the terms, theories and apparatus used in the various applications of electricity. Its only fault, as far as we can see, is that the subject is treated rather too much from a French point of view, and that though the translator has added many well-known points in English practice he has not given much attention to what is done here. In many instances he has left undisturbed the French measures of length, weight and temperature. The size of each number of the Birmingham wire gauge is given in millimetres only, though the tables could easily have been rendered more useful by adding the equivalent fractions of an inch. These omissions can easily be supplied in a future edition, but, even in its present state, the book will, doubtless, prove a valuable companion to any practical electrician.

The Elements of Railroading.

I.—DRAINAGE.

There is probably no written work treating of the construction of roads or of railroads in which the necessity of drainage is not more or less insisted upon; yet in the building of our railways it really seems to be the last matter to be attended to. Examine any newly opened road, and you will see that the engineers have been careful to have the works completed with care, to conform to the standard sections. The assistant in charge of any division has possibly quarreled with the contractor a half-dozen times about each cutting, in order to get the slopes dressed to a true plane, instead of being left a warped surface. It would be a marvel, nevertheless, if any measures had been taken to preserve the slopes, or the ditches at the bottom of them, which are relied upon to drain the ballast. Generally the first hard rains of spring, aided by the thawing of the frozen earth, suffice to break down the slopes, fill up the ditches, and reduce the force engaged upon maintenance of way to a condition of despair; for the ballast must become saturated with water, the outer portion of it gets filled with mud, destroying its usefulness in great part; it is not unusual for the track to be floated by the mud and water, before the ditching train can remove enough of the sloughing banks to enable the water to run away at the sides of the cut. Matters are the worst in clay cuttings, of course, although bad enough in any wet soil; that is, in any soil which does not drain itself, as sand or gravel will do, if the clay substratum is not too near. If the sloughing is very bad, it is probable that a heavy stone wall will be decided upon as the proper thing to hold the slopes back; or, where stone is scarce, the pile-driver will be called into requisition to drive a stout row or two of piles to resist the forces of Nature; but the cause of the sloughing is unaffected and continues to undermine the banks, frequently topples over the wall, and after a few years surmounts the piles or crowds them into the cut.

Meanwhile, the mud-train has had to struggle each fall and spring with the mud which would get over, through or around the protection which had been erected.

Now, in most cases, all this trouble could have been avoided, the perfect form of the slopes and ditches, as well as the integrity of the ballast, would have been preserved, and no one would ever have thought of building a slope wall or driving piles to hold back the mud, if the engineer who built the road had looked to the drainage.

It may be broadly stated, as a general proposition, that if the water is removed from any bank of earth, that bank will stand at a slope of one and a half to one, the usual earth slope, or at a steeper angle; if the water is not removed from a wet bank, the slope will take a flatter angle, depending upon the degree of its saturation. The most effectual mode of removing the water from a wet cut is the cheapest one to adopt; but remove the water you must, if you wish for peace and quiet. It is best to begin at the top; most railroad men begin at the bottom, because that is nearest to the track, it may be supposed. If the cutting is through sloping ground, as most cuttings are, one side of the cut will be exposed to the flow of water from the ground above it, which should be intercepted by a ditch at the top of the slope; a short distance back from the edge is the best. If the surface soil is porous, resting upon a clay subsoil, the ditch should be lined, if possible, with cement or bitumen, or with plank, if necessary; the object being to catch the water and *carry it away*, as an eave-trough does, not letting it soak down into the clay below, which is usually too wet already.

The next place to give trouble is the foot of the slope; the water which falls upon the slope, that which percolates through the bank, and that which comes from the ballast, unite to soak and thereby to soften the earth at the bottom of the slope, which has to sustain the entire load of the hill above, which it can do only so long as it is dry and consequently firm; as soon as it becomes soft it must yield to the pressure from above. Get this water away as quickly as you can; you cannot be too quick about it. If your cut is upon a very steep grade, it is possible that you may be able to run the water off in the ditches, at the foot of the slopes; if on any ordinary grades, the best way is to lay TILE DRAINS in the bottom of the ditches at a depth, say 5 ft., sufficient to have them secure from frost, and so ready to work continuously day and night, summer and winter, which they will do if put below frost. If any springs are discovered in the slopes of the cutting, they should be piped into the main drains which you lay in the bottoms of the ditches; if the whole is wet, it can be perfectly drained by lines of small tiles laid diagonally down the slopes, at intervals of from 20 to 40 ft., according to the amount of water to be taken care of. A little experience, with a little good judgment, will enable any one to proportion the sizes of tiles used to the length and wetness of the cutting to be drained. Beginning at the mouth of a cutting with tiles of 5 in. in diameter, they may diminish in size to 3 in. at the summit of the grade to which the tiles are laid, or at the upper end of the cut. Two or three lines of tiles may be laid in the same trench if the quantity of water requires more room than is afforded by one line. The tiles for piping off the water in the slopes should not be of less than 2 in. bore. The drain tiles of round section are the best, as least likely to be removed out of line, as a little reflection will show. They are frequently made with flat bottoms; these, if canted or rolled over by any cause, must get out of line, and so interrupt the continuity of the drain. They should be one foot in length, the frequency of the joints is an advantage, as it allows the water to get readily into the drain. Whoever begins the use of drain-tiles will suppose that he must provide some porous material, like gravel, to cover them with, in order to afford a free passage for the water into the drain; but he need have no anxiety about that, for the water is bound to get in if the drain is there. A good stiff clay is the best covering for the tiles, as it does not wash nor fall into them at the joints as fine gravel does. In some very soft quicksand cuts, in which the fine sand filled the tiles rapidly, destroying their usefulness, a thick sod was laid in the bed of the ditch, the grassy side up; the tiles were laid in this and covered with another sod, grassy side down; the ditch was then filled up with earth. The result was a very successful drain. When round tiles are used, the bottom prepared for them should be semi-circular and as nearly as possible of the exact size of the tiles, which is easily accomplished by having tools of the proper form and dimensions. The men who are accustomed to laying these drains have acquired much skill, and in ordinary soils do not disturb or handle any more material than is necessary to allow the insertion of the tiles; they will often make an opening of less than one foot in width at the top of a ditch 5 ft. deep; and they will contract for laying such drains at a price per rod which will astonish the inexperienced engineer or track-master. If an expert can be got to superintend the first operations, he will be cheap at almost any price; yet no one who will act upon these hints can go far wrong; nor will the cost of his work be anything like that of not draining his road-bed, if it is wet. When the drain is completed, if he will notice the flow of water from it and calculate the quantity which flows out each day and consider that it never entirely ceases; he will begin to wonder where it all went to before the drain was built, and he will be entirely satisfied that the cost of the drain was small compared with the resulting benefit. In a double-track cut, perfection of drainage is secured by laying another line of tiles between the tracks.

If, in summer, there should be little or no water passing through the drains, the moles, snakes and even muskrats will harbor in the ends of them, obstructing them with their nests. To guard against such intrusions requires some precautions, as building a small trap or catch basin near the mouth of the drain; a U trap has been used with success, made of baked clay like the tiles. All such devices require to be cleaned out frequently, for the mud brought down in the water is deposited in them; if not cleaned out, the drains would become obstructed, which would injure them seriously.

In very wet cuts, where the quicksand flows in faster than it can be removed, a good drain can be laid of poles, roughly trimmed of their limbs, laid heads and points, so as to keep the drain of uniform section. Such a drain from 12 in. to 18 in. square, will pass a great quantity of water, and one in each ditch will drain almost any cutting; if there is plenty of water, it will last forever and keep itself clear; if there is not a large flow of water, it will soon become filled up.

Let any person in charge of roadway select his wettest cutting for experiment, if he has any doubt as to the efficacy of the mode of drainage here recommended; and he will certainly find his track lie as still in the winter, in an excavation so drained, as if it were on a bank of gravel. But it is not important to use the methods here described; it is of vital importance to get rid of the water, in one way or another.

The drain tiles will be found of inestimable value for the drainage of large station yards where ditches would be inconvenient, and even in such places as will admit of surface ditches, because they can and should be placed deep under the surface; for it is of great benefit to remove all water to a distance of 5 or 6 ft. from the ballast upon which the tracks lie. Capillary attraction will raise moisture from 5 ft. in depth, in sand or loam; and when freezing weather begins, the dryer the ballast and the soil upon which it rests may be at the depth to which freezing extends, the less heaving of the ground there will be, and consequently the slighter will be the disturbance of the track. In bad soils, the grounds surrounding shops, engine houses and station buildings are wet and uncomfortable in autumn and spring, or in any wet weather. This may be completely prevented by tile drains, provided an outlet for them can be secured. Of course the more fall there is for any drain, within reasonable limits, the better for the drain; yet even when carried level they will do a great deal of good. By their use, the thickness of the ballast or of gravel under tracks and around stations may be reduced about one-half—an economy which will pay well for laying the tiles, where ballasting materials are scarce.

Among the most difficult places to maintain in busy yards are the crossings of tracks, particularly those that cross nearly at right angles. Knowing this, the person in charge of the track generally excavates deeply at such a point and fills in with broken stone or with the best material he can get, providing in this way an excellent drainage well for the adjacent road-beds. If he will supplement his labors by laying drain tiles in each direction through the bed of ballast which he has prepared for his crossing, taking care to give them a free discharge, he will find that he will need do nothing more for that crossing until it is worn out. Some idea of the quantity of water discharged by these drains may be conveyed to the inexperienced if they will notice the flow from the eave-spouts of a small shed during a smart shower, and remember that an equal volume of water falls upon the same area of track or yard, soaking the ground permanently, if means are not provided for its removal. A perfectly dry cellar under a warehouse in a wet clay soil was secured by the use of these drain tiles; and in another instance they maintained the bottom of the pit of a transfer table in an excellent dry state. A water station was secured near a very wet cut by turning the drain into a cistern; and it happened in this case, as it might in many others, that the cistern afforded the most convenient outlet for the drains that could be had.

There are thousands of miles of imperfectly ballasted or wholly unballasted road-bed in this country, lying near the natural surface of the ground, which would be rendered passably safe against the worst effects of wet and frost, if only a deep ditch were dug on each side of the road-bed to allow the water falling on the surface to flow quickly to a considerable depth below the surface on which the sleepers rest. The chief reason why broken stone and gravel make the best ballast is that they permit the water to pass through and to flow away from them so rapidly; if other materials can be so treated as to approximate to their condition, they will approach just so nearly to them in value for supporting the track. On poor railways, where expenditures must be kept at a minimum, and where the track-master is allowed only men enough on each section to operate the hand-car, it often seems quite impossible to get any ditching done, however sore the need. The section foreman's idea of usefulness and duty is confined to "keeping up the joints and centres;" he and his men are always tamping the ties and disturbing the road-bed, when they are not screwing up the joint bolts or riding over the section on the hand-car. These are important matters, of course, but they may be overdone, while ditching is left undone. Under this conviction, in the straightened circumstances which have been described, and determined that the necessary ditches should be cut before the autumnal rains, the section foremen, upon a hundred miles of new road in operation, were told that they must not touch a joint, neither surface nor tamp any part of the track, unless it became positively dangerous; they must devote all their time and energy to ditching; any foreman found doing anything except ditching would be dismissed, unless he could offer an acceptable excuse. These orders were issued in August, with the result that by the first of November the entire line was well ditched, at all important places and the track passed through the winter and spring very comfortably, notwithstanding a lamentable want of ballast.

The neophyte placed in charge of a division of track should be warned that the section foreman of common mould always begins a ditch at the upper end, and, however well he may carry it on, he never opens the lower end of it, so that it may discharge freely, until the track-master finds the ditch full of water and orders the necessary outlet to be provided. It is best, therefore, to give special directions about this, in each case, to begin with.

The earth thrown out of the ditches should be evenly spread over the surface outside of them, making a gentle slope towards the ditch, whenever possible. The sooner this is done the cheaper it will be done; for freshly moved earth shovels much easier than that which has been consolidated by rain. When the earth has been spread in this way, the roadway can be cultivated or easily kept clear of brush and weeds, and as nothing is more discreditable than a disorderly roadway, this is a matter worthy of attention.

All this has no reference to what is considered the main drainage system of a railroad, which looks to provision for passing the streams and rivers safely through or under it; only on rare occasions over it. There are many large and scientific treatises on these matters, which should be studied before the tyro undertakes to act as engineer in their construction; yet there are a few hints not found in all the text books, which may be useful.

In this country, the habits of all streams are likely to be very much altered by the building of a railroad into any new part of it. Generally the marshes will be ditched the woods will be felled and other changes made, which will concentrate the flow of water into fewer channels than it originally flowed through, and it will reach them much quicker than it formerly did; consequently the water-way provided for them should be very much greater than that which they would require if they could be expected to retain their original size. The very best judgment and the largest conceivable allowance may altogether fail (and often do fail) to anticipate to what dimensions any stream may attain; but as a minimum the following has proved a tolerably safe rule: Ascertain the area occupied by the stream, at its highest known flood; double this to arrive at the area to be provided before the water shall rise above its previous flood level; and allow at least a half more of room for extra floods, before your structure can be considered full.

But, however much room may have been provided, the labors of the engineer may come to naught from the neglect to construct or maintain a clear channel for the water to enter in a direct manner or to flow freely away from the bridge, or arch or culvert. So often are these channels neglected, particularly under deep embankments, where it is somewhat difficult or fatiguing to visit them, that the track-master or superintendent who has some such structures under his charge, which he has not lately looked after, would do well to take a hand-car or special engine at once and see how they appear. They have been often found blocked with brush and floodwood, when they appeared clear and right from above; or the channel has begun to wash out at the lower end of the paving to a depth which the next flood would render dangerous; or the last flood started an opening into the embankment behind one of the wings, etc.; for all which evils there is an easy remedy, if taken in time; but after the next storm it may be too late.

CHARLES PAINE.

The Rocket.

The following letter, signed "Robert Stannard" appears in the London *Engineer*:

"The sketch made by Mr. Nasmyth represents *not* the 'Rocket,' but the 'Northumbrian'—except that it does not show an awkward projecting step attached to the leading end of the latter engine's tender, against which my father one day tore his knee and was slightly lamed for life, and that there were, I think, no funnel stays on the 'Northumbrian.' At any rate the sketch is nothing like what the 'Rocket' was in 1830.

"The 'Rocket' which ran on the day of the opening, and subsequently, was the identical 'Rocket' that ran in the Rainhill trials in 1829. She was completed only just in time for the competition, and never ran a single trip before then. In the evening after the first day's trial, Mr. Stephenson said to my father, 'Now, Stannard, let us have a trip to ourselves;' whereupon he got up, followed by Wakefield, the driver, my father, Mr. Booth, Mr. Moss, and myself. There was not much room, and Mr. Stephenson remarked, 'Put your boy up on the tub, Stannard; he'll be more out of harm's way there;' and there indeed I sat (on the tender) during my first ride on the 'Rocket.' As the butt had been newly painted only the day before, I stuck on very literally while we ran some four miles out and back.

"The enormous funnel made her rather end-heavy, and at last brought her to grief. One evening, going at a good speed, she jumped at a bad joint and tipped up, head downward, in the track, killing an unfortunate visitor, and considerably damaging her funnel and front framing. She was then taken to the shops and fitted with a smoke-box, and a shorter funnel, and after about a fortnight she was sent back to my father again, who worked her up to a very short time before the opening day. I believe no other alteration was made in her till after the 15th of September, 1830. The same water-butt was on her tender on the day as she carried in the previous October, and it was used for a while afterward, but was eventually replaced by a wrought-iron box tank, carried on the same tender. The 'Rocket' worked regularly on the line after it was opened, but was displaced as soon as a sufficient number of heavier engines were provided to deal with the traffic. From facts for which I can vouch from my own knowledge it is clear that the 'Rocket' of 1830 was the same engine as the 'Rocket' of 1829 with an altered funnel; that she worked nearly all the time between her recorded public appearances, and that she did run in the regular service on the Liverpool & Manchester Railway."

TECHNICAL.

Locomotive Building.

The Dickson Manufacturing Co., in Scranton, Pa., is building five consolidation engines for use on the new Erie & Wyoming Valley road.

The Taunton Locomotive Works, in Taunton, Mass., have an order for six locomotives for the Old Colony road, to be delivered as soon as possible.

The Rhode Island Locomotive Works, in Providence, have taken an order to build 30 light locomotives for the Brooklyn Elevated road.

Car Notes.

The Marshall Car Wheel & Foundry Co., whose works at Marshall, Tex., were recently destroyed by fire, has let contracts for new buildings to replace those burned. The new works will be larger than the old ones.

The car wheel works at Buffalo, which for several years were operated by J. & N. C. Schoffield, but have been closed for two months past, started up Nov. 3 with a large force of men. They will be operated by a new concern known as the Buffalo Car Wheel Works, of which Mr. G. M. Miller is President and Treasurer. The former owners are still interested as stockholders and directors.

The shops of the Terre Haute & Indianapolis road at Terre Haute, Ind., are building 50 new coal cars for use on the road.

Bridge Notes.

The Passaic Rolling Mill Co. of Paterson, N. J., is completing an iron highway bridge over the Passaic River, near Paterson.

The Keystone Bridge Co. in Pittsburgh have orders which will keep the works running for a year and a half. One order is for a bridge over the Schuylkill at Philadelphia.

The Missouri Valley Bridge & Iron Co., of Leavenworth, Kan., is building an iron highway bridge near Rich Hill, Mo., and has a number of other orders on hand.

Iron Notes.

The Wheeler Iron Co. has leased its rolling mill and chain factory at Middlesex, Pa., to Mr. Wheeler, President of the company, and the works will be started up very shortly.

The firm of M. V. Smith & Co., owning and operating Tyrone Forge, in Blair County, Pa., has been dissolved and the forge will be sold and probably abandoned.

Lousia Furnace No 2, in Pittsburgh, is now making an average of 225 tons of pig iron a day, which is the largest output yet recorded from this furnace.

The Kelly Iron Co., in Ironton, O., is now making steel nails from purchased slabs.

The estate of the Kemble Coal & Iron Co., at Riddlesburg, Bedford County, Pa., will be offered at sheriff's sale Nov. 15. The property consists of two blast-furnaces, coke ovens and a large number of other buildings at Riddlesburg, with connecting railroad tracks, and 32 tracts of land, nearly all containing coal and iron ore. The sale will also cover mineral rights in 17 other tracts.

Manufacturing and Business Notes.

M. M. Buck & Co., in St. Louis, have just shipped one of their patent steam inspection cars to Algiers, Africa, to be used on a railroad in that distant country. The wood work of the car was made entirely of red cedar, that being considered the best wood to withstand the ravages of worms and wood-eating parasites that abound in the section to which the car is destined.

Alfred Webb & Co., in Chattanooga, Tenn., are repairing and rebuilding Rockwood Furnace. They are also building 12 boilers for Citico Furnace.

The Rail Market.

Steel Rails.—The market is steady and quotations are made $28.50@$29 per ton at mill for small lots, although good orders could probably still be placed at about $1 less. Sales are reported as keeping up well with production, although no heavy orders are noted.

Rail Fastenings.—Spikes are quoted at 2 cents per pound in Pittsburgh, track bolts at 2.25@2.50 cents, and splice-bars at 1.65@1.75 cents, with light demand.

Old Rails.—Old iron rails are quoted at $17.50@$18 per ton at tidewater, with few sales and a dull market. Old steel rails are quoted at $17@$18 per ton in Pittsburgh, with little demand.

Uniform Signals.

The formal agreement to adopt the system of Uniform Train Signals, passed by the General Time Convention at its session in Philadelphia, on Oct. 9, is certainly a subject for congratulation to all friends of uniformity in railway operations. It is hardly to be expected that all companies will at once conform, but a large majority will hereafter be governed by one system, and the others will naturally gravitate toward the larger body. New lines will adopt the uniform system rather than any other. In this way those who do not now conform will find themselves in a constantly decreasing minority.

It is also more than probable, if any legislation on the subject is attempted, the system now adopted will be made its basis, with the powerful argument in its favor that it is already in general use. There is a still greater probability that efforts at legislative interference may now be considered unnecessary, as they certainly are undesirable in most instances, where technical questions are concerned.—*Official Guide.*

The Rote Automatic Brake.

A test of the Rote automatic brake was made on the New York, Pennsylvania & Ohio road at Mansfield, O., Oct. 31, which is described as follows: "The train consisted of nine flat cars and one caboose to which the Rote brake was attached, and a passenger coach and common caboose which were not so equipped. Each car that had the brake attached had the flooring removed over the wheels so that the working of the brake could be observed. The test was witnessed by State Railroad Commissioner Sabine, State expert Prof. Robinson, General Superintendent Ferris, Superintendent Phillips, Engineer Thompson, Road-Master McInarna, Train Despatcher Mann and others from the New York, Pennsylvania & Ohio; Master Mechanic Harrison and staff, of the Baltimore & Ohio; Mr. Bannister, of the Nickel-Plate, and other railroad people, together with a large number of newspaper men and capitalists. The first test took place on a 50-ft. grade. The train was running down grade at a speed of 30 miles per hour, when the engineer reversed his engine suddenly, and the train stopped within a distance of 1,182 ft., as measured by a tape-line. The second test was made on a 30-ft. grade at a speed of 20 miles per hour, and the train was stopped within 800 ft. In neither case was the hand-brake applied. After this a number of sudden stops were made, and the train backed in order to show that the automatic relieving device was as perfect as its locking device."

A Coupling for Tenders.

Mr. George H. Colby, Master Mechanic of the Boston & Albany road, has invented a coupling for locomotive ten

ders, which in effect continues the Miller hook throughout the entire passenger train. There are no links and pins to break, no slack to be taken up, no jerking or pounding in starting or stopping, and no swaying motion of the tender and forward car. It consists mainly of a heavy casting which is attached to the tender frame and holds the Miller hook, a spring bunter and the means of operating the draw-bar. The forward end of the draw-bar is pinned to a heavy-threaded, spring-encircled bolt, secured under the tender, between the frames, in a strong casting. A spiral spring, secured to the draw-bar immediately behind the bumper beam, draws the head into the position it occupies when coupled. The uncoupling is done by a wheel and staff, which operates a chain and ratchet. The invention is being applied to the passenger engines of the Boston & Albany and several of the Eastern railroads, and locomotive builders have adopted it as their standard for passenger engines.—*Car-Builder.*

Electrical Train Signals.

Mr. J. P. Hovey, late Superintendent of Motive Power of the Rochester & Pittsburg, has an invention relating to an improvement in electrical connections, more especially designed to be used for connecting, in a closed circuit, the cars of a railway train, and the locomotive drawing them, having a battery and an electric bell in circuit, so that if the circuit is broken at any point in the train, either by design or accident, the engineer will be signaled through the bell to stop.

Mr. Webb on His Compound Locomotives.

The following are extracts from a letter written by Mr. Webb, Locomotive Superintendent of the London & Northwestern Railroad, to a friend in this country:

"It is strange how much it takes to convince people about anything new. We have run now nearly a million of miles of express work with the compounds, of which I have now got 30 on the main lines in regular work, and one in the underground in London, which is one of the standing type in use there, compounded. She has now run 14,000 miles with a consumption under 24 lbs., against the ordinary type uncompounded of 32 lbs. We have a test in two ways, thus, as we condense through the tunnels, and the temperature of the water in the tanks on arriving at the Mansion House the day I tried it was 162° and 175° respectively.

"I have now got the first out of the large compounds, for our heavy night sleeping-berth trains, 14 in. high pressure cylinders and one 30 in. low by 24 in. stroke in both cases. I never saw an engine shape better, or run steadier. You may write a letter on the foot plate at 60 miles per hour. Mr. Coleman Sellers, of Philadelphia, was here on Friday, and had a spin with me on her, and expressed himself very much pleased, and he proposes to speak about her on his return, at the Franklin Institute.

"I am now bending the single throw crank out of a straight bar, in the hydraulic press."—*American Machinist.*

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Baltimore & Ohio, annual meeting, at the company's office in Baltimore, Nov. 17, at 10 a. m. Transfer books close Nov. 6.

East Tennessee, Virginia & Georgia, annual meeting, at the office in Knoxville, Tenn., Nov. 12.

Louisville, New Orleans & Texas, special meeting, in Memphis, Tenn., Nov. 10.

Memphis & Charleston, annual meeting, in Huntsville, Ala., Nov. 13.

Mobile & Ohio, annual meeting of debenture-holders, at the office, No. 11 Pine street, New York, at 2 p. m., Nov. 22

New Orleans & Northeastern, annual meeting, at the office in New Orleans, Dec. 1.

New York, Lake Erie & Western, annual meeting, at the office in New York, Nov. 25.

Old Colony, annual meeting, at the United States Hotel in Boston, Nov. 25.

Philadelphia & Reading, annual meeting, at the office in Philadelphia, Jan. 12, 1885. The registry of stock closed Oct. 12.

Rochester & Pittsburgh, annual meeting, at the office, No. 20 Nassau street, New York, Nov. 12.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Maine, 4 per cent., semi-annual, payable Nov. 15, to stockholders of record on Oct. 30.

Chicago & Alton, 2 per cent., quarterly, payable Dec. 1, to stockholders of record on Nov. 10.

Cincinnati, Sandusky & Cleveland, 3 per cent., semi-annual, on the preferred stock, payable Nov. 1.

Nashua & Lowell, 3½ per cent., semi-annual, payable Nov. 1, to stockholders of record on Oct. 25.

New York, Providence & Boston, 2 per cent., quarterly, payable Nov. 10.

Pennsylvania, 3 per cent., semi-annual, payable Nov. 29 to stockholders of record on Oct. 31. As generally expected, the company drops from 4 to 3 per cent. This dividend makes 7 per cent. paid this year.

Seaboard & Roanoke, 5 per cent., semi-annual, payable Nov. 1.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Western Association of General Passenger & Ticket Agents* will hold its next regular meeting at the Paxton Hotel in Omaha, Neb., on Wednesday, Nov 12.

The *Master Car-Builders' Club* will hold regular meetings at its rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month. The next regular meeting will be on Thursday, Nov. 20. Subject for discussion: Freight Car Couplings.

The *New England Railroad Club* will hold its regular meetings at its rooms in the Boston & Albany station in Boston, on the evening of the fourth Wednesday in each month.

The *Western Railway Club* will hold regular meetings at its rooms, No. 103 Adams street, Chicago, on the third Wednesday in each month.

Brotherhood of Railroad Brakemen.

The first annual convention of the Brotherhood of Railroad Brakemen was held in Oneonta, N. Y, Oct. 20. Delegates were present from a number of lodges and all necessary business was transacted. The report showed that the association, which has only been in existence one year, has now 37 lodges and a membership of about 1,400. It is a mutual insurance association, modeled chiefly on the plan of the Conductors' and some other associations of this class, and is extending its operations very rapidly.

ELECTIONS AND APPOINTMENTS.

Atlantic & Pacific.—The following circular from the President's office is dated Boston, Oct. 31:

"Mr. George W. Ristine is hereby appointed Traffic Manager of this company, with office temporarily at San Francisco, Cal. This appointment to take effect Nov. 1, 1884.

"In connection with the above, Mr. George W. Ristine has been appointed Traffic Manager of the Atlantic & Pacific fast freight line, composed of the Atlantic & Pacific railroad, the St. Louis & San Francisco Railway, and the Atchison, Topeka & Santa Fe Railroad companies, and will have general charge and supervision of both freight and passenger traffic passing over the respective roads, to and from all California and Pacific coast points. Communications should be addressed to him for the present at San Francisco, California."

Boston, Winthrop & Shore.—At the annual meeting in Boston, Nov. 4, the following directors were chosen: Francis French, Samuel W. Hale, Keene, N. H.; John H. Buttrick, Lowell, Mass.; Clarence A. Parks, Wakefield, Mass.; Alexander Beal, Alpheus P. Blake, Lyman S. Hapgood, David Loring, Arthur E. McClellan, Boston. The board re-elected John H. Buttrick President.

Brotherhood of Railroad Brakemen.—At the annual convention in Oneonta, N. Y., Oct. 20, the following officers were chosen: Grand Master, W. J. Barnett, Oneonta, N. Y.; Vice Grand Master, E. McCarty, Oneonta, N. Y.; Grand Secretary and Treasurer, U. C. Osterbout, Oneonta, N. Y.; Grand O. and I., L. C. Foster, Youngstown, O.; Trustees, D. J. McCarty, E. White, Daniel Cease; Executive Committee, E. F. O'Shea, J. A. Lang, H. E. Dougherty, G. W. Newman, John Gilroy.

Central Iowa.—At the special meeting in Marshalltown, Ia., Oct. 29, the following directors were chosen: H. J. Boardman, Edward E. Chase, George T. M. Davis, Wm. Hanna, Frederick W. Huidekoper, Harvey Kennedy, Francis Peabody, Jr., E. H. Perkins, Jr., Russell Sage, Elijah Smith, Alfred Sully. This is a compromise board.

Central Ontario.—The present list of officers of this company is as follows: S. J. Ritchie, President, Akron, O.; G. W. McMullen, Vice-President, Trenton, Ont.; J. B. McMullen, General Manager, Trenton, Ont.; Robert Fraser, Secretary and Treasurer, Trenton, Ontario.

Chesapeake, Ohio & Southwestern.—The following from the office of Superintendent James L. Frazier is dated Louisville, Ky., Oct. 29:

"Mr. J. A. Dew is hereby appointed Master of Transportation, with headquarters at Louisville, Ky., in place of Mr. J. E. Reeves, resigned. Mr. J. F. Klepper is appointed Train-master and Chief Dispatcher, with headquarters at Paducah, Ky. These appointments take effect Nov. 1, and all employés in the Transportation Department will be governed accordingly."

Chicago & Great Southern.—Mr. Philip B. Shumway, of Evanston, Ill., has been appointed Receiver of this road.

Chicago, St. Louis & Pittsburgh.—The new shops at Indianapolis were opened on Nov. 1, 1884. The work of all the lines of the Southwestern system centring at that point will be concentrated thereat.

William Swanston (in addition to his duties on the Jeffersonville & Indianapolis road) has been appointed Master Mechanic of Indianapolis shops; W. C. Arp, General Foreman of locomotive work and Foreman of round-house; Edward Austin, General Foreman of car work; George Sweeley, Foreman of machine shop; William Stuart, Foreman of blacksmith shop; George Willacy, Foreman of boiler shop; John Gottschall, Foreman of car inspectors; W. W. Richardson, Shop Clerk. The offices of Foreman of paint shop and Storekeeper have not yet been filled.

Cincinnati, Indianapolis, St. Louis & Chicago.—At the annual meeting in Indianapolis, Ind., Oct. 28, the following directors were chosen: R. R. Cable, Chicago; Allen M. Fletcher, Thomas A. Morris, Indianapolis; Lars Anderson, Samuel J. Broadwell, B. F. Evans, George Hoadly, M. E. Ingalls, Henry Lewis, George Willshire, Cincinnati; J. S. Fay, Boston; George Bliss, C. P. Huntington, New York. The board re-elected M. E. Ingalls President; E. F. Osborne, Secretary and Treasurer.

Colorado-Utah Association.—Mr. George H Daniels has been chosen Commissioner of this Association, and Mr. J. F. Tucker, Arbitrator.

Indiana, Bloomington & Western.—Mr. L. C. Morris has been appointed General Eastern Traveling Agent, with office in Buffalo.

Kansas & Gulf Short Line.—The officers of this company are as follows: W. S. Herndon, President, Tyler, Tex.; Hugh Stevenson, Vice-President, New York; V. K. Stevenson, Financial Agent, New York; Eli Culverhouse, General Manager; T. R. Bonner, Treasurer; B. B. Cain, Secretary; E B. Stevenson, General Freight and Passenger Agent; general offices at Tyler, Tex. Car service reports and car tracers will be forwarded by and should be sent to E. M. Goss, Car Accountant. Remittances for balances should be addressed to and drafts should be drawn on B. B. Cain, Secretary.

Lake Shore & Michigan Southern.—Mr. J. E. Slater has been appointed Assistant Traveling Auditor in place of F. N. Hayden, resigned.

Louisville, New Orleans & Texas.—Mr. T. J. Barnard is appointed General Agent of this road at New Orleans.

Meadville & Linesville.—Mr. A. T. Delamater has been appointed Auditor in place of W. S. Thorp resigned.

Minneapolis, Sault Ste. Marie & Atlantic.—Chief Engineer W. W. Rich is appointed General Superintendent also, with office at Turtle Lake, Wis. Mr. J. G. Taylor is appointed Auditor and General Freight and Passenger Agent, with office at the same place.

New York, Lake Erie & Western.—Mr. Cornelius V. V. Ward has been appointed Eastern District Passenger Agent for the territory covered by and adjacent to our Eastern and Delaware divisions and branches, including the Northern Railroad of New Jersey and the New York & Greenwood Lake Railway, with headquarters at No. 187 West street, New York city.

The following order from President King is dated Nov. 1: "The title of S. M. Felton, Jr., Assistant to the President, is hereby changed to General Manager of the New York, Pennsylvania & Ohio Railroad, and as such he will have charge of the operation and maintenance of the same. All officers and employés will be governed accordingly."

The board has elected W. A. Wheelock, of New York, a director in place of S. S Guthrie, of Buffalo, resigned.

Northeastern, of Georgia.—At the annual meeting in Athens, Ga., Oct. 30, the following directors were chosen: A. S. Buford, G. T. Baker, A. K. Childs, W. P. Clyde, Howell Cobb, Julius Cohen, G. E. Deadwiler, S. C. Dobbs, E R. Hodgson, C. W. Hood, R. Nickerson, W. G. Oakman, R. K. Reaves, G. S. Scott, Billups Phinizy, James White, G. H. Yancey. The board elected Pope Barrow President; R. K. Reaves, Vice-President; E. R. Hodgson, Secretary; R. L. Moss, Treasurer. The following officers were also reappointed: H. R Bernard, Superintendent; A. L. Hull, Auditor; Sol. Haas, Traffic Manager; Mercer Slaughter, General Passenger Agent; J. H. Drake, Acting General Freight Agent; L. L. McClesky, Assistant General Freight and Passenger Agent. The road is controlled by the Richmond & Danville.

Oakdale Iron, Coal & Transportation Co.—Mr. Wm. Rennie is Superintendent of this company, which operates the Walden's Ridge Railroad.

Philadelphia & Reading.—Mr. Franklin A. Comly has been chosen a director in place of L. A. Robertson, resigned.

Pullman's Palace Car Co.—Mr. L. M. Bennett is now Superintendent of the Pacific Division, with office at Omaha, Neb.; his assistants are W. H. Scott at Omaha and J. E. Coolidge at Ogden. Mr. James Martin is Superintendent of the Southern Division, with office in Louisville.

Rock Island & Peoria.—Mr. Robert Stackhouse has been appointed General Freight and Passenger Agent, with office in Rock Island, Ill., in place of A. N. Martin, resigned.

South Florida.—Mr. F. A. Dickens has been appointed General Road-master, with office at Sanford, Florida.

St. Johns.—Mr. J. W. Smith is appointed Auditor, with office at St. Augustine, Fla., in place of Charles Smith, resigned.

Syracuse, Ontario & New York.—The directors have elected the following officers: President, Ashbel Green; Secretary and Treasurer, J. P Ord; in the place of Gen. E. F. Winslow, President, F. E. Worcester, Treasurer, and John L. Nisbet, Secretary, resigned. Mr. J. D. Layng has resigned as General Manager.

Union Pacific.—The following circular from General Manager Callaway, announcing an appointment already noted, is dated Omaha, Neb., Nov. 1:

"Mr. S. T. Smith has been appointed General Superintendent of the Union Pacific Railway and controlled lines, with headquarters at Omaha, Neb. His orders will be respected and obeyed accordingly."

Mr. S. T. Smith's appointment as General Superintendent of the entire line was noted last week. This is a new office, as for some time past there has been a general superintendent to each general division, reporting to the General Manager. Those offices will be abolished and the division superintendents will report to the General Superintendent. Mr. J. M. Eddy is appointed Assistant General Superintendent, with office in Denver.

Vermont & Canada.—At the annual meeting in St. Albans, Vt., Oct. 30, the following directors were chosen: Charles P. Billings, Jed. P. Clark, A. S. Hall, H. D. Hyde, John L. Mason, T. H. Perkins, Augustus Russ.

Wabash, St. Louis & Pacific.—Mr. M. M. Martin has been appointed General Master Car-Builder in place of U. H. Kohler, resigned.

Western Maryland.—The following directors have been appointed by the Baltimore City Council: Christian Devries, E. G. Hepsley, Samuel H. Tagart, James W. McElroy, Wm. A. Boyd, Wm. S. Rayner, T. Edward Hambleton, James C. Weedon.

Wilmington & Weldon and *Wilmington, Columbia & Augusta.*—Mr. H. Walters has been appointed General Manager of the Wilmington & Weldon and the Wilmington, Columbia & Augusta railroads (in place of R. R. Bridgers, resigned), to take effect on and after Nov. 1, 1884. Mr. Walters' office address will be Baltimore, Md.

Mr. Bridgers remains President of the two companies.

PERSONAL.

—Mr. Herman Kretz, local treasurer and paymaster of the Texas & Pacific Railroad, resigned his position Nov. 1.

—Mr. A. N. Martin has resigned his position as General Freight and Passenger Agent of the Rock Island & Peoria road.

—Mr. L. A. Robertson has resigned the position as a director of the Philadelphia & Reading Railroad Co. to which he was elected last January.

General Manager D. B. Robinson of the Mexican Central writes from Chicago that his health is improving, and he says he hopes to soon resume his duties.

—Mr. S. S. Guthrie, of Buffalo, N. Y., has resigned his position as a director of the New York, Lake Erie & Western Co. He has served in the board for several years.

—Mr. H. C. Barlow has resigned his position as General Freight Agent of the Atchison, Topeka & Santa Fe road, to accept an important position with the Mexican Central.

—Mr. J. E. Reeves has resigned his position as Superintendent of Transportation and Telegraph of the Chesapeake, Ohio & Southwestern road. He has held that office since February, 1882.

—Mr. U. L. Kohler has resigned his position as General Master Car-Builder of the Wabash, St. Louis & Pacific road. He has been on the road over 20 years, rising gradually from the lowest position.

Mr. James H. Anderson resigned his position as Master Mechanic of the New York, Providence & Boston road on Nov. 1. He has been on the road for 40 years, and now retires from active work.

—It is reported that Mr. George H. Vaillant, for many years General Freight Agent of the Lake Shore & Michigan Southern road, has resigned that position. The report has not been confirmed as yet.

—It is reported that Mr. G. W. Ristine will shortly resign his position as Commissioner of the Transcontinental Association, in order to accept the position of traffic manager of the Atlantic & Pacific road.

—Mr. H. A. Fisher has resigned his position as Assistant General Passenger Agent of the Missouri Pacific road, and will remove to Toledo, O., where he expects to engage in the manufacture of brick and tile.

—Mr. Warder Cummings resigned his position as Superintendent of the Texas & Pacific Division of the Missouri Pacific lines Nov. 1. Mr. Cummings has been connected with the Missouri Pacific for a number of years.

—Mr. G. L. Dudley, who died recently at his residence in Wilmington, N. C., was born in that city in 1824, and had always lived there, with the exception of a few years in California. He was formerly Auditor of the Wilmington & Weldon Co. for several years.

—The Atlanta *Constitution* of Oct. 26 says: "Last night a delightful event occurred at the residence of Mr. B. W. Wrenn, lately of the Western & Atlantic Railroad, but now General Passenger Agent of the East Tennessee, Virginia & Georgia. At nine o'clock a special car on the

Peachtree Line carried out to Mr. Wrenn's residence a company of his railroad friends. Arriving at the residence Mr. J. C. Andrews, General Agent of the Kennesaw route at New Orleans, in a neat speech presented Mr. Wrenn with an exceedingly handsome gold watch, and presented Mrs. Wrenn with a beautiful bronze Swiss chime clock. The watch was appropriately inscribed. Mr. Wrenn acknowledged the gift in fitting terms."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1884.	1883.	Inc. or Dec.	P.c.
Ten months ending Oct. 31:				
Canadian Pacific..	$4,761,816	$4,463,612	I. $298,204	6.7
Central Iowa.....	1,299,103	1,135,229	I. 163,874	14.4
Chi. & Alton	7,227,184	7,260,243	D. 33,059	0.4
Chi. & East. Ill..	1,283,165	1,366,619	D. 83,454	6 1
Chi., Mil. & St. P..	18,944,000	19,121,243	D. 177,243	0.9
Chi & Northwe t.	19,420,686	20,894,773	D. 1,474,087	7.1
Northern Pacific.	10,748,561	8,016,843	I. 2,721,718	33.9
Roch. & Pitts....	955,569	498,977	I. 456,592	91.3
St. L. & San F..	3,868,872	3,084,726	I. 784,146	25.4
Nine months ending Sept. 30:				
Union Pacific....	$18,370,503	$20,819,738	D. $2,449,235	11.8
Net earnings. ..	7,832,839	10,156,425	D. 2,323,586	22.8
Month of September:				
Northern Pacific.	$1,236,560	$1,194,714	I. $41,846	3.5
Net earnings...	539,853	460,221	I. 109,632	23.8
Union Pacific....	2,499,271	2,881,639	D. 382,368	13.3
Net earnings...	1,333,976	1,441,970	D. 107,994	7.5
Month of October:				
Canadian Pacific.	$768,000	$618,386	I. $149,614	24.2
Central Iowa.....	154,033	130,041	I. 23,992	18.5
Chi. & Alton	889,747	901,577	D. 11,830	1.3
Chi. & East. Ill..	155,141	145,021	I. 10,120	7.0
Chi., Mil. & St. P..	2,539,000	2,531,128	I. 7,872	0.3
Chi. & Nor'west..	2,459,600	2,793,000	D. 333,400	11.9
Northern Pacific..	1,461,370	1,397,222	I. 64,148	4 6
Roch. & Pitts....	109,514	75,372	I. 34,142	45.3
St. L. & San Fran.	494,500	361,600	I. 132,900	36.7

Weekly reports of earnings are usually estimated in part, and are subject to correction by later statements.

Grain Movement.

For the week ending Oct. 25, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eleven years:

	North-western	—Northwestern shipments.—			Atlantic.
Year.	receipts.	Total.	By rail.	P. c. By rail.	receipts.
1874.....	2,578,641	2,412,374	292,512	12.1	2,255,461
1875.....	4,251,118	4,597,686	1,154 484	25.2	3,124,670
1876	4,308,747	3,90 ,672	2,351.914	60.3	4,010,805
1877.....	5,071,098	3,827,013	587,178	15.3	5,435,919
1878.....	4,893,449	4,088,021	905,027	22.1	6,262,386
1879.....	7,100,708	4,443,656	1,390,496	31.3	7,481,102
1880.....	8,166,032	6,748,761	2,326,182	34.4	9,100,198
1881.....	4,400,918	4,264,210	1,886.258	44.3	3,653,019
1 382.....	6,278.640	3,317,149	1,894.056	57.1	3,530,975
1883.....	6,256,619	5,030,605	2,127,925	42.3	4,239,002
1884	8,041,709	5,059,437	1,959,412	38.7	4,360,568

Thus the receipts of the week this year were larger than in the corresponding week of any previous year except 1880, and 1,785,000 bushels more than last year. They were also 792,000 bushels more than in the previous week of this year. The increase over the previous week was very large at Chicago and St. Louis. At Duluth the receipts were the largest it has ever had with one exception.

The shipments of these markets were larger than in the corresponding week of any other year except 1880, though nearly the same as last year. The rail shipments were less than last year and less than in the years of railroad war. The shipments down the Mississippi were 159,284 bushels.

The receipts of Atlantic ports for the week were larger than in the corresponding week of any other year since 1880, but not half as great as in that year, and much less than in any of the four years from 1877 to 1880. They were 448,000 bushels more than in the previous week of this year, but with that exception were the smallest for five weeks. They remain large at New York (which received 67½ per cent. of the whole), but have become small at Philadelphia and Baltimore the two receiving 12.4 per cent. of the whole, against 21.7 in the month of September and 27.8 in August.

Exports from Atlantic ports for this week to Oct. 25 have been for five years:

	1880.	1881.	1882.	1883.	1884
Flour, bbls.	133,707	70,392	163.201	204,738	196,170
Grain, bu.	4,447,876	2,277,939	1,576,153	2,180,709	1,413,562

The exports this year were very nearly as great as in 1882, but much less than in the other years.

Buffalo grain receipts by lake up to Oct. 31 were as follows, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1884.	1883.	Inc. or Dec.	P.c.
Flour.....	2,094,781	1,783,163	I. 311,618	17.5
Grain.....	48,515,835	59,09 ,659	D. 10,577,834	17.9
Total, bushels	58,989.740	68, 09,484	D. 9,019,744	13.3

Shipments eastward of grain received by lake for the same period were, in bushels:

	1884.	1883.	Decrease.	P.c.
By canal.....	33,945,418	39,210,012	5,264,594	13 4
By rail	9,486,650	13,439,552	3,952,902	29.4
Total	43,432,068	52,649,564	9,217,496	17.5
Per cent. by rail...	21.8	25.5	3.17	....

The canal opened for navigation on the same date (May 7) in both years.

Coal.

Coal tonnages for the week ending Oct. 25 are reported as follows:

	1884	1883.	Inc. or Dec.	P. c.
Anthracite.....	785,143	756,354	I. 28,789	3 8
Eastern bituminous...	204,745	205,975	D. 1,230	0.6
Coke.....	43,956	63,071	D. 19,115	30.3

Anthracite sales and deliveries are reported to be increasing. There is a fair demand, notwithstanding the continued mild weather, which has a somewhat depressing influence. The demand is not large enough, however, to make probable any change in the agreement of the companies which provides for the stoppage of mining two weeks in December.

The coal tonnage of the Pennsylvania Railroad for the week ending Oct. 25 was:

	Coal.	Coke.	Total.
Line of road	144,201	42,265	186.536
From other lines	73,006	1,691	74,697
Total.....	217,207	43,956	261,223

The total tonnage this year to Oct. 25 was 10,767,286 tons, against 9,950,206 tons to the corresponding date last year, an increase of 827,030 tons, or 8 3 per cent.

The light coke shipments are explained by the light demand resulting from the shutting down of many furnaces and iron mills. There are now 4,535 coke ovens idle in the Connellsville District; about two-thirds of these are stopped in accordance with the producers' pooling agreement, the rest on account of want of orders.

Cumberland coal shipments for the ten months ending Nov. 1 are reported by the Cumberland *Civilian* as follows:

Shipments from mines:	1884.	1883.	Inc. or Dec.	P. c.
Cumb. & Penna. R. R....	1,572,720	1,414,022	I. 158,098	11.2
George's Creek & Cumb.	452,711	445,383	I. 7,328	1.6
West Va. Cent. & Pitts..	383,461	274,826	I. 108,635	39 5
Direct to Balt. & Ohio...	1,144	4,017	D. 2,873	71.0
Total.....	2,410,036	2,138,848	I. 271,188	12.7
Shipments out of region:				
Balt. & Ohio R. R.....	1,807.312	1,166,847	I. 649,465	54.9
Bedford Div., Pa. R. R...	312,700	364,512	D. 51,812	14.2
Ches. & Ohio Canal.....	290.024	607.489	D. 317,465	52.3
Total.....	2,410,036	2,138,848	I. 271,188	12.7

Local deliveries are included in the Baltimore & Ohio tonnage report. That road is taking a larger share of the shipments this year than ever before.

The Southwest Virginia Improvement Co., whose mines are at Pocahontas, Va., on the New River Branch of the Norfolk & Western road, reports for the nine months ending Sept. 30: Coal mined, 182,054; coal shipped, 115,369; coal coked, 68,731 tons.

Cotton.

Cotton movement for the two months of the crop year from Sept. 1 to Oct. 31 is given by the *Commercial and Financial Chronicle* as follows, in bales:

Interior markets:	1884.	1883.	Inc. or Dec.	P. c.
Receipts.....	790,486	959,476	D. 168,990	17.4
Shipments.....	651.643	731,898	D. 80,255	11.0
Stock, Oct. 31.	156,058	276,734	D. 120,676	43.5
Seaports:				
Receipts.....	1,435,830	1,465,907	D. 30,077	2.1
Exports.....	638.446	658,169	D. 19,723	3.0
Stock, Oct. 31.....	678,833	762,547	D. 83,714	11.0

It should be remembered that a considerable part of the cotton reported at interior markets appears again in the receipts at the seaports.

The *Chronicle* says: "In the table below we give the receipts from the plantations in another form, and add to them the net overland movement to Oct. 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight:

	1884.	1883.	1882.	1881.
Receipts at the ports to Oct. 3	1,435,830	1,465 907	1 423,666	1,424,046
Interior stocks on Oct. 31 in excess of Sept. 1.....	138,843	227,578	158,607	244.715
Total receipts from plantations	1,574,673	1,693,485	1,582.273	1,668,761
Net overland to Oct. 1....	12,391	19,235	17,680	30,896
Southern consumption to Oct. 1.....	28,000	30,000	28,000	20,000
Total in sight Oct. 31	1,615,064	1,742,720	1,627.953	1,719,657
Northern spinners' takings to Oct. 31	223,968	317,000	257,178	328,985

"It will be seen by the above that the decrease in amount in sight Oct. 31, as compared with last year, is 127,656 bales; the decrease as compared with 1882 is 12,8 9 bales, and with 1881 104,593 bales."

Florida Rates.

A small war in freight and passenger rates between Charleston, Savannah and Florida points, which recently broke out between the Florida Railway & Navigation Co. and the Savannah, Florida & Western road, has been ended by agreement between the two companies. The agreement includes rates between Charleston and Savannah and Jacksonville and all St. John's River points, both by rail and steamboat.

Colorado-Utah Association.

At a meeting held in Chicago, Oct. 31, the territory of the Colorado pool was fixed to include, on the west, Denver, Pueblo, Colorado Springs, and all points on the Denver & Rio Grande and junction points with the Denver & South Park. On the south, all points on the Denver & Rio Grande and Atchison, Topeka & Santa Fe, all territory in Nebraska and Kansas, and competitive points on the Union Pacific in Colorado.

The organization of the Association was completed by the election of Mr. George H. Daniels as Commissioner and Mr. Joseph F. Tucker as Arbitrator.

Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior region from the opening of navigation up to Oct. 29 are reported by the Marquette *Mining Journal* as follows, in tons:

	1884.	1883.	Inc. or Dec.	P. c.
L'Anse.....	61,722	60,829	I. 807	1.4
Marquette	888,089	652,836	I. 235,253	36 0
Escanaba.	1,308,708	1,327,635	D. 18,927	1.4
St. Ignace.....	45,214	50.719	D. 5,505	10.8
Total.....	2,303,737	2,092,019	I. 211,718	10.1

Of the Marquette shipments the Marquette, Houghton & Ontonagon road brought down 644,479 tons and the Marquette & Western 243,610 tons. Of the Escanaba shipments the Marquette District furnished 453,055 tons and the Menominee District 555,653 tons.

Besides the ore shipped by lake, there were 24,088 tons delivered to local furnaces.

Shipments of pig iron were, from Marquette, 8,068; Escanaba, 4,100; St. Ignace, 6,149; total, 18,317 tons.

Southwestern Railway Association.

At a meeting held in Chicago, Oct. 31, requests were presented by the Missouri Pacific and the Chicago, Milwaukee and St. Paul for a new division of territory and a new distribution of business. They were referred to Commissioner Midgley, with instructions to prepare plans and submit them to an adjourned meeting.

Passenger Rates.

A change in the passenger war at New York took place Oct. 31, when the New York Central reduced its Chicago rate to $13.50, first class. The West Shore and the Erie at once cut down to $12, announcing their determination to keep up the differential of $1 50 below the Central, no matter what rate that road might make.

A different form of cutting has been begun by the Baltimore & Ohio, that road having put on a limited fast express between Baltimore and Chicago, without the extra fare charged on the limited trains of the other roads.

Notwithstanding the low rates now prevailing, the scalpers in New York advertise tickets at still lower figures, and it is generally reported that they are backed by the companies.

In the West matters are quiet for the present, and rates between Chicago and Kansas City are generally maintained. The Chicago, Burlington & Quincy has begun to compete for passenger business between Chicago and St. Louis, and has put on a fast train between those cities. Its line is some 60 miles longer than that of the Chicago & Alton.

Through Freight to Mexican Points.

The following circular to American shippers has been issued by Mr. F. L. Parker, General Freight Agent of the Mexican Central Railway:

"The attention of American shippers, railways, and lines, is called to the necessity to sending of the consignees at least two copies (marked 'Duplicate,' 'Triplicate,' etc.) of each bill of lading for freight consigned to points in Mexico. One of these for use at the Custom House at the frontier, the other as authority for the settlement of any overcharge, or other claim.

"This company desires to serve the common interest of the railways and its patrons in Mexico, by protecting every through bill of lading properly issued by a responsible road or line. This can only be done, when, on the bill of lading, the following points are clearly shown:

"1. Name of the railway, line or company issuing the bill of lading; place were issued, and date; route between shipping point and El Paso, Texas.

"2. Full address of the consignee, and parties to whose care freight is consigned for customs entry at El Paso, together with all shipping marks and numbers.

"3. Full description of the property, which, as far as possible, should be in the terms used in the through Mexico classification, in order to avoid any claim as to rate, resulting from alleged difference in the classification.

"4. Actual weight in pounds, and the assumed car load weight, when the rate is for a car load of not less than 20,000 pounds—9,072 kilograms. When no weight is given in the bill of lading, or when bill of lading weight is not correct, this company's weights will be conclusive.

"5. The rate in cents per 100 pounds, American money, and the points between which such rate applies, and whether 'prepaid' or 'collect.' When a car load rate is named, it must be clearly expressed, in order to provide for any claim here, that rate per 100 lbs. applies only to the actual weight. This is especially important in the case of light and bulky freight like machinery, vehicles, agricultural implements, etc. No bill of lading marked 'contract' or 'contract rate' will be recognized.

"6. Charges advanced in American money, with a brief description of the nature of said charges.

"7. The rate of exchange, as between American money as stated in the bill of lading, and Mexican silver in which the charges will be paid at destination. This rate of exchange is 1.16⅔ per cent.

"While this company assumes no liability on any through bill of lading, except so far as the same applies to its own road, it will, when convenient, recognize through bills of lading properly issued, provided the overcharge on same beyond its own road may be charged to the connecting line at El Paso, for account of whom it may concern.

"No overcharge made by American lines on through shipments will be adjusted without presentation of a through bill of lading, properly made, as above suggested.

"Consignees in Mexico, when ordering goods from the United States, are requested to inclose a copy of this circular with their order. They will be furnished upon application."

Southern Railway & Steamship Association.

The Board of Arbitration (Messrs. John Screven, T. H. Carter and Z. K. Sibley) has given the following decision in the case submitted to it by these resolutions of the Executive Committee:

"*Resolved*, That the question as to whether the business of the Western Railroad of Alabama, in part or in whole, is local to the Central and Georgia railroads or not; and the question as to whether the business of the Atlanta & West Point Railroad, in part or in whole, is local to the Central and Georgia railroads or not, is hereby submitted to arbitration.

"*Resolved*, That the question of division of cotton at Atlanta and Macon, and the cotton business of the Atlanta & West Point Railroad, and the Western Railroad of Alabama, if decided not to be properly the local business of the Central and Georgia railroads, be submitted to arbitration."

The decision of the arbitrators, Messrs. John Screven, Thomas H. Carter and E. K. Sibley, is as follows:

This case came before the Board of Arbitration at Atlanta, Oct. 27, 1884, and has had the most careful consideration.

The Board is of the opinion that the case before it does not meet the conditions as literally specified in the final clause of the fifth section of the agreement of 1884, which reads as follows:

"But this shall not be construed to give the Executive Committee or the General Commissioner any control over the *local business of any company*, even though *such local business* may of necessity pass through points at which the traffic is divided by apportionment."

Under the literal construction of this clause, the business of the Atlanta & West Point Railroad, and of the Western Railroad of Alabama, is not local to the Central and Georgia railroads, and ceases to be local business at Atlanta.

The divisions of cotton at Macon and Atlanta and of the Atlanta & West Point Railroad and Western Railroad of Alabama, are awarded as follows, taking effect Sept. 1, 1884:

Divisions of Cotton at Macon.

	Per cent.
East Tennessee, Virginia & Georgia Railroad	43
Central Railroad of Georgia...	57
Georgia Railroad...	
Total.	100

Divisions of Cotton at Atlanta.

Western & Atlantic Railroad.....	7
East Tennessee, Virginia & Georgia Railroad.....	24½
Richmond & Danville Railroad.....	21½
Central Railroad of Georgia.....	47
Georgia Railroad	
Atlanta & West Point Railroad.....	
Total.....	100

The cotton from the Atlanta & West Point Railroad and from the Western Railroad of Alabama passing through Atlanta is to be divided as follows:

	Per cent.
Central and Georgia railroads	75
East Tennessee, Virginia & Georgia Railroad.....	12
Richmond & Danville Railroad.	10
Western & Atlantic Railroad	3
Total.....	100

It is not understood by the Board that the question of divisions of merchandise to the Atlanta & West Point Railroad and the Western Railroad of Alabama has been submitted to it.

The Western Pass Agreement.

The general managers of the Western roads interested in business between Chicago and the West met at the Lakeside Building yesterday to consider the renewal of the pass agreement, which has not been lived up to for some time past. The result of the meeting was that the old agreement was again adopted, to take effect at once, as far as is possible, although it is not to be renewed formally until Jan. 1. The agreement provides that no passes be issued by any of the lines west of Chicago, St. Louis, St. Paul or Minneapolis

to the West for the purpose of influencing the shipment of freight or as rebate to reduce rates. Mr. George M. Bogue was appointed Arbitrator, and instructed to confer with other roads not yet in the agreement. The subject of 1,000-mile tickets was also discussed, and permission given the lines to issue and sell such tickets when found advisable at a rate of 2 cents per mile east of the Missouri River, and at a higher rate west thereof.—*Chicago Inter-Ocean, Oct. 30.*

RAILROAD LAW.

Liability of Sleeping-car Companies.

A dispatch from Louisville, Ky., Nov. 1, says: "Yesterday Judge Richards, of the Superior Court, reversed the decision of Judge Stiles, of the Court of Common Pleas of Jefferson County, who had given judgment for the plaintiff in the case of Gaylors vs. the Pullman Car Co. for the loss of a diamond pin on the defendant's car, between Chicago and Louisville. Judge Richards held that the Pullman Co. was not subject to the stringent liability of an inn-keeper, but does implicitly undertake to keep reasonable watch over the passengers and their property, and the faithful performance of this undertaking is the limit of its duty in this respect; and the failure of the Pullman Co. to keep such faithful watch must be the foundation of every action seeking to charge them with the loss of articles which a passenger takes with him upon a car. It was not shown that the Pullman Co. had been guilty of neglect; hence the ground for a reversal."

Special Excursion Ticket—Contract.

In the case of Moore against the East Tennessee, Virginia & Georgia Co., the Georgia Supreme Court sustains the judgment of the lower court for defendant, holding:

1. Where, upon the sale of a round trip ticket with coupons attached for passage over two roads, a special contract was made to the effect that the passenger should sign his name in Jacksonville, Fla., (the terminal point of the trip), before the agent there, before he could return on the ticket, such special contract controlled; and if the passenger failed to sign as agreed, the company had the right to eject him. This being done politely by the conductor, the passenger was not entitled to damages.

2. The ticket being for the purpose of passing him over two roads, each had the right to stand on the contract; and if one passed him the other was not bound thereby to pass him also, in the teeth of the special contract.

3. The fact that the conductor of the contracting road, upon the return of the passenger detached the last coupon before refusing and returning it and the ticket to the passenger, did not affect the action brought by the latter for being ejected. With or without the coupon, he was not entitled to travel over the road on the ticket against his contract.

4. The evidence required the verdict.

Duty of Railroad Company to Abate a Nuisance.

In the case of English against the Central Railroad Co., the Georgia Supreme Court affirms the decision of the lower court for plaintiff, holding as follows:

A tenant rented certain land for the year 1877, knowing that a railroad company maintained a nuisance thereon in the shape of a pond of water, which affected the health of his family. With this knowledge he rented the place for the year 1878, when it became more sickly, so much so that he was unable to gather his crops; and an action was brought against the railroad.

Held 1. That the landlord had the right to use and occupy the place, and under his lease, the tenant had the same right, and he could presume that the railroad company would abate the nuisance. The law did not require him to move away, but did require the company to abate such nuisance; and it was, therefore, not error to refuse to charge that if the plaintiff could have avoided the injury to himself, he could not recover.

2. Where one railroad company erected a nuisance, and was subsequently leased to another company, which continued to maintain such nuisance, if the owner of the property on which it was situated notified the President and officers of the lessee company of it, and his tenant also notified the section-master of the company, this was sufficient notice and demand for abatement, and the tenant could bring an action for injuries resulting to him without more. Notice of the nuisance is sufficient.

Injury to Employe—Negligence.

In the case of Harrison against the Central Railroad Co., the Georgia Supreme Court affirms the judgment of the lower court for plaintiff, holding as follows:

Where the rule of a railroad company provided that while a coupler was between the cars the train should not be put in motion, a coupler so engaged had the right to presume that it would not be moved, and that he could pass between the projecting beams of the cars, which he could have done if the train had not been moved; and if, while so passing out, under a signal given by another servant of the company, the engineer backed the train, and the coupler was caught between the projecting beams and crushed to death, if he were a minor, his father could recover for the loss of his services; and a recovery would not be prevented by the fact that the deceased might have passed under the beams in safety by stooping.

In the case of Redding against the East Tennessee, Virginia & Georgia Co., the same Court reverses the order of the lower Court granting a non-suit, and holds as follows:

In a suit by an employé against a railroad company for injuries inflicted by the negligence of a co-employé, it is incumbent upon the plaintiff to show that the injury was the result of neither fault nor negligence on his part. The question of negligence belongs peculiarly to the jury, and except in a clear case, where there is no conflicting evidence showing that the employé was in fault or was negligent, the Court should not withhold the case from the jury by awarding a non-suit. Where the evidence upon this point was doubtful, it should have been submitted to the jury, and to grant a non-suit was error.

OLD AND NEW ROADS.

Allegheny Valley.—The holders of income bonds are trying to effect an organization to protect their interest in the property. A meeting was recently held in Philadelphia, at which a committee was appointed to represent them.

Americus, Preston & Lumpkin.—The grading on this road is now progressing well, over 700 men being employed in grading, clearing the right of way and bridge building. Grading is nearly all completed from Americus, Ga., on the Central Railroad of Georgia to Preston, and ties are now being delivered along the line. Nearly all the bridges are completed, two only remaining to be finished.

Baltimore & Ohio.—In Chicago, Oct. 31, representatives of this company had a long conference with the President and General Solicitor of the Illinois Central Co. in regard to the lease of the station property of that company to the Baltimore & Ohio. No definite result was reached. The Baltimore & Ohio people took the ground that the lease, as far as it referred to the Illinois Central tracks, was a perpetual one, and that they thought the time limitation only referred to the freight house and the use of the passenger station on the lake front. The Illinois Central officers, on the other hand, insisted that the lease covered everything, including the use of tracks, and that it expired Nov. 1, and said that if no arrangement was made they would take steps to eject the Baltimore & Ohio from the premises. They declared, however, their readiness to make any reasonable temporary arrangement from which the Baltimore & Ohio might withdraw upon giving 30 days' notice, as they were not inclined to make unnecessary trouble. It was finally decided that a temporary agreement should be drawn up and submitted.

After a temporary lease had been drawn up it was found impossible for both parties to agree upon its terms, and finally the Baltimore & Ohio people decided to accept no agreement, as they thought that it would be better for their interests to insist upon their rights and have the matter decided in the courts. The Baltimore & Ohio trains will continue to run upon the Illinois Central track, but an action of ejectment will probably be brought at once. No attempt, it is understood, will be made to stop the use of the Illinois Central tracks and stations pending a decision in the suit, which is brought simply to determine definitely the rights of both parties in the matter.

Baltimore & Ohio and the Pennsylvania.—In accordance with the decision of the court refusing an injunction, the Baltimore & Ohio trains ceased to run over the Pennsylvania Railroad to New York on Nov. 3. No further steps have been taken to contest the matter legally.

By way of direct competition with the Pennsylvania Railroad the Baltimore & Ohio has put on a limited express train over its road between Chicago and Baltimore, running by way of Washington. This train makes the run between Chicago and Baltimore in 26 hours, the time to Washington being an hour less. In one respect it will differ from the limited express trains of the New York Central and Pennsylvania; no extra fare will be charged, and passengers will be carried at the same rate as on the ordinary trains, at regular first-class fares.

It is probable that this is the beginning of a sharp competition for through business between the two roads.

Batesville & Brinkley.—This road is now completed and opened for business to Tupelo, Ark., 7 miles northward from the late terminus at Riverside, and 40 miles from the junction with the Memphis & Little Rock road at Brinkley. The road is reported as doing a very good local business.

Boston & Maine and the Eastern.—The Massachusetts Supreme Court on Nov. 3 announced its decision in the suit in equity brought by Willard P. Phillips, one of the trustees of the Eastern Railroad, against the Eastern Railroad and William C. Rogers and William B. Bacon, the other trustees. The suit was brought to enjoin the Eastern Railroad from executing a lease of that road to the Boston & Maine Railroad, as authorized by an act of the Legislature. There was a demurrer to the bill on behalf of the defendants, and answers in support of the lease by a large number of bondholders who had been summoned in by the court to represent their interest. The case was reserved by Judge Field for the consideration of the full Court. It was argued before that Court in March last. The Court, in now overruling the demurrer, sustain the lease in all points except as to Article 5. That article provides in substance that upon the issue of preferred stock by the Eastern Railroad in exchange for certificates of indebtedness, the Boston & Maine Railroad shall pay dividends on the preferred stock equal in amount to the interest theretofore paid on the extinguished certificates, and that the dividends shall have the same priority of payment under the lease as such interest would have had. The Court disapproves of this article on substantially the ground that to entitle the preferred stock to dividends there must be an actual extinguishment of the mortgage indebtedness to all intents and purposes, and not merely a conversion of it into another form of security, having the same charge upon earnings as the certificates, left outstanding. The Court holds that there is nothing to prevent the lease, provided its terms are not contrary to law, and bases its decision on Article 5 alone, intimating that without that article the lease would be entirely valid and legal.

Brattleboro & Wilmington.—The town of Brattleboro, Vt., has voted not to levy a tax in aid of this road. This action probably puts a stop to its construction for the present.

Burlington, Cedar Rapids & Northern.—On the Dakota Extension track is now laid to Pipestone, Minn., 24 miles northward from the late terminus at Luverne, 76 miles from Lake Park, Ia., and 310 miles from Cedar Rapids. From Pipestone northward tracklaying has been in progress for some time.

California & Nevada.—Track is reported laid on this road from Oakland, Cal., eastward 17 miles, with grading in progress some 20 miles further. A construction train is now at work on the road.

Central Iowa.—At the special stockholders' meeting, held Oct. 29, a compromise board was elected, including the members of the Boston board and of the New York or Sage-Sully board. At the same time the stockholders unanimously voted to approve the issue of consolidated bonds, to retire all existing bonds, and also authorized the directors to indorse the bonds of the Keithsburg Bridge Co., and to provide for the construction of the bridge across the Mississippi River at Keithsburg. In accordance with the compromise agreement previously made, it is understood that all questions between the railroad company and the construction company are to be submitted to arbitration.

Central Massachusetts.—At the recent annual meeting it was stated that nearly all the old debt has been exchanged for new preferred stock, and nearly all the old common stock has also been exchanged for the stock of the new company. Negotiations are reported to be in progress with a New York firm for the completion of the road, the plan involving the issue of new mortgage bonds. Heretofore the only definite proposition made for the completion of the road has been from another railroad company, which the officers of the Central decline to name, only saying that the proposition was of such a character that they could not accept it in justice to their stockholders.

Central Ontario.—This road is now in operation to Coe Hill, Ont., 104 miles from the lake terminus at Pictou and 72 miles from the Grand Trunk crossing at Trenton. The lake port and shipping docks of the road at Pictou are on Weller's Bay, on the north shore of Lake Ontario, and its northern terminus is in the iron mines of Hastings County, Ont. The iron ore there is of Bessemer quality, and the deposits extend over a large territory. Besides the railroad the company owns large tracts of iron land.

Central Pacific.—The Supreme Court of California has decided that the State Treasurer must pay the coupons of the 7 per cent. "state aid" bonds of the Central Pacific Railroad Co. under the contract with that company. The bonds themselves have been retired by the company. The amount of the two coupons unpaid is $105,000.

Chicago & Atlantic.—It is announced that the November coupons will not be paid at present, the earnings not being sufficient, and the Erie as guarantor being pressed for funds just now. It is expected, however, that they will be paid before long. The bondholders cannot take any action, under the terms of the mortgage, until six months after a default in interest, and the coupons, it is expected, will be paid before that time.

Chicago, Burlington & Quincy.—This company has put on a fast train to run between Chicago & St. Louis, making the same time and connections as those of other lines. The new arrangement began Nov. 2. Although the Chicago, Burlington & Quincy has owned the St. Louis line for some years it has never run through trains between the two cities.

Chicago & Great Southern.—Application was made last week by the creditors of this company for the appointment of a receiver. The Court granted the petition and appointed Mr. D. Shumway, of Chicago. The company has been in embarrassed circumstances for some time; so much so that the running of trains was recently suspended for over a month on account of its inability to pay the wages of the trainmen. The present company was formed by the consolidation of the Chicago & Great Southern and the Chicago & Block Coal companies in 1883, and its road extends from Fairoaks, Ind., on the Louisville, New Albany & Chicago road, south to Yeddo, 80 miles. There has been $1,000,000 in stock issued, and first-mortgage 6 per cent. bonds to the amount of $2,000,000 were authorized, but only $1,000,000 have been sold, although it is stated that a considerable amount has been pledged as security. The road was built in expectation of securing a large coal traffic, which it has not received.

Chicago & Northwestern.—It is stated semi-officially that the proposed extension of this company's line from Freeport through Galena to Savanna, Ill., has been abandoned for the present, and that nothing will be done probably for a year to come.

Columbus, Hocking Valley & Toledo.—The annual report of this railroad for the year ending June 30, 1884, as submitted to the Ohio Railroad Commissioner shows: Capital stock, $10,316,500; entire indebtedness, $15,393,656; net earnings, $1,010,955, against $1,062,540 in 1883. The company has suffered from the coal strikes.

Denver & Rio Grande.—The *Commercial and Financial Chronicle* says of the default on the November coupons of the first-mortgage bonds of this company: "Let us look for a moment at the position and standing of this mortgage. It is literally what it purports to be—a first mortgage, not, however, upon the whole system as it now exists, but upon the original system, and therefore covers 295 miles of road from Denver south to El Moro in one direction and to Alamosa in the other, the whole being within the state of Colorado. Though the Denver & Rio Grande is now largely an east and west line, the original project was for a north and south line—from Denver down to El Paso—and it was in pursuance of this plan that the original 295 miles of road embraced in the mortgage was constructed. Subsequently the company's powers were enlarged and extended, and it has since built lines in various parts of Colorado, but to this day its only entrance into Denver, or means of reaching that city, is over the piece of road first built from Denver south. The mortgage thus covers the oldest, and in this view no doubt the most profitable part of the system, though on the latter point we have no definite information. All the through traffic, however, either east-bound or west-bound, must pass over the section from South Pueblo to Denver, and the local traffic north and south from and to points in Southern Colorado and Northern New Mexico must also be considerable.

"But what commended the bonds no doubt most to the favor of investors was their apparently strong position as regards the extent of the company's total income and the small call upon that income made by the bonds in question. The mortgage originally provided for a total issue of bonds of $14,000,000, but by agreement with the bondholders on Sept. 12, 1878, the amount then outstanding was not to be added to in any manner, and therefore $6,382,500 marks the extreme limit of the issue under the mortgage. How small this is will appear when we say that the consolidated mortgage coming next after the first mortgage, alone has $19,740,500 bonds on which interest was regularly paid till July 1, 1884, and there are also several millions of general mortgage fives (the latest issue) outstanding. The interest required on the $6,382,500 first mortgage is only $446,775 per annum, while that on the consolidated mortgage is $1,381,835, and the total on the two together is only $1,828,610, against which the company had net earnings of $2,732,965 in the year 1883, $2,620,627 in the year 1882, and $2,624,764 in 1881.

"On this strong position as regards income and priority, the bonds were considered an absolutely safe investment, and many were purchased at high figures by parties who buy only securities of undoubted stability and value. It may be stated that the possibility of a default in interest was not even thought of—being so remote as to be considered practically out of question. The case as it presented itself to the investor was this: Here is a first mortgage of small amount on a large system of road; though not covering the whole road, it is in no sense a divisional mortgage; that is, it is not a mortgage on this or that branch or division, but covers the original system, since greatly enlarged, but still forming the important part of the whole; furthermore, the earnings to pay the interest have been adequate several times over to meet the charge—why should not these bonds then be a safe purchase, and bearing 7 per cent. interest and having a long time to run be cheap at even 120, which figure they commanded for some time? So reasoned the investor, and acting on this reasoning put his money into the bonds. Now he finds that notwithstanding all these advantages the semi-annual interest due Nov. 1, calling for only $223,387, is passed.

"But perhaps the most inexcusable part of this transaction is that the default, made under circumstances which give it such an air of injustice, is not deemed of sufficient importance to call for any official declaration as to the cause of the step. Not a word of explanation is offered the bondholders. They are not informed whether it is intended that the default shall be temporary only, or whether it is to be continued and the bondholders forced to apply the remedy given them under the mortgage. They are simply told, with apparent indifference, that the Receiver has no money to pay the interest. As a consequence, the bonds which as recently as last March sold at 112, have dropped to 70¼. Of course the company's earnings have undergone diminution in the present year, but lest it may be supposed that they have not been sufficient to meet the small amount of interest called for by the first-mortgage bonds, we will say that in the first six months of the calendar year, when the road had to contend with a most remarkable combination of unfavorable circumstances, and when as a result net earnings fell off over one-half, the total of the same was yet $569,970, or $123,000 more than enough in this half year to meet the interest for the whole year. It would be interesting to know what the earnings have been for the months since June, the last half of the year having heretofore always

been much the better half, but application to the Receiver for the figures has failed to secure them.

"We are thus critical with regard to this case, because it is the latest, as it is the most pointed illustration of that utter disregard and neglect of bondholders' rights which railroad management has in recent years so frequently exhibited. The Denver & Rio Grande first-mortgage bonds are held in London and in Amsterdam, as well as in this country, and their wide distribution makes a default upon them, under circumstances which so reflect on the integrity of all concerned, peculiarly harmful."

East Broad Top.—The new branch of this road, which is to connect with the South Pennsylvania line, is now completed from the junction with the main line at Orbisonia, Pa., southward to Shade Gap, in Huntingdon County, 6 miles. Work is in progress to Burnt Cabins, in Fulton County, 8 miles further. The branch, like the main line, is of 3 ft. gauge, but the road-bed and bridges have been made wide to permit it to be changed to the standard gauge at any time.

Eastern.—The gross earnings for the year ending Sept. 30 last were $3,571,594, against $3,584,506 for the preceding year, a decrease of $12,912, or only 0.3 per cent. It is stated that the expenses were also very nearly the same as in the preceding year, so that there will be very little change either in net earnings or in the surplus over fixed charges.

East Tennessee, Virginia & Georgia.—By mistake last week the earnings of this road for the nine months of the calender year to Sept. 30, were given in this column as for the three months of the fiscal year from July 1 to Sept. 30. The statement given under the head of "Railroad Earnings" was right. The corrected statement for the three months of the fiscal year from July 1 to Sept 30:

	1884	1883.	Inc. or Dec.	P. c.
Earnings	$960,071	$1,068.782	D. $108,711	10."
Expenses	586.012	548,407	I 37.605	6.8
Net earnings	$374,059	$520.375	D. $146,316	28.1
Per cent. of expense	61.0	51.2	I. 9.8	....

The mileage was the same in both years. The decrease in earnings has not been confined to this road, having been general on nearly all Southern lines.

Florida Railway & Navigation Co.—The southern extension of this company's Peninsula Division has been located to Plant City, the point of junction with the South Florida road. Grading is now in progress and a large part of the rails required have been received. Tracklaying will shortly be begun and will be pushed as fast as possible.

Florida Southern.—This company has received bids for the extension of its road from Leesburg, Fla., to Pemberton's Ferry, on the Withlacoochee River, a distance of 30 miles. At the last-named point it will connect with the South Florida road. Contractors are required to give bonds for the completion of the road within five months.

Fremont, Elkhorn & Missouri Valley.—Work is now progressing well on the extension of this road, from Valentine, Neb., westward. There are 90 miles of grading under contract, all of which will be finished this season with the exception of some heavy cuts, although tracklaying will not be begun until next spring. The line has been located for 50 miles further to White River, and preliminary surveys have been made as far west as Fort Fetterman, Wyoming. From White River the survey is being made of a branch to the Black Hills. This road is owned by the Chicago & Northwestern Co., but operated under a separate organization.

Grand Trunk.—A Toronto, Ont., dispatch says that last April it was agreed between General Manager Hickson of the Grand Trunk Railway Co. and delegates from the train men that the latter's wages should be reduced 5 per cent for six months. That time having expired Mr. Hickson has written to the delegates asking for an extension of one, two or three months. The proposition will be submitted to the men.

Gulf, Colorado & Santa Fe.—This company has been making a general reduction in its working force, including trackmen, station hands and all other classes of employés. At the same time salaries and wages have been reduced, in some cases as much as 25 per cent. The working expenses are being cut down wherever possible.

Kansas & Gulf Short Line.—This road is now in operation from Tyler, Tex., southward to Forest, 70 miles. Of this line 63 miles were built in 1882, and the extension of 7 miles to Forest has been completed this year. The road is of 3 ft. gauge, and extensions both southward and northward are proposed. The line is an extension and outgrowth of the old Jacksonville & Rusk road.

Long Island.—The following is a comparative statement of gross earnings for the fiscal years ending Sept 30:

	1880-3.	1882-3.	1881-2.	1880-81.
Passenger	$1,758,534	$1,695,177	$1,608.771	$1,237,837
Freight	721,784	718,743	634,698	586,203
Miscellaneous	275,971	271.170	166,165	75.933
Total	$2,756,288	$2,685,090	$2,409,634	$1 889,973

Net earnings are not yet published. The increase last year over 1882-83 was $71,198, or 2.7 per cent.; over 1881-82, it was $346,654, or 14.4 per cent., and over 1880-81 it was $856,315, or 45.1 per cent.

Marietta & North Georgia.—This road is now in operation from Marietta, Ga., north to Ellijay, 70 miles. At the northern terminus the company is now putting up a bridge over the river, and as soon as that is completed tracklaying will be begun. From Ellijay north to Murphy, N. C., the distance is about 40 miles, and the company expects to finish that section next year.

Mexican Central.—The *Two Republics* of Mexico says: "The Mexican Central has contracted at Tuxpan for 14,000 ties of zapote wood for the Tampico Branch.

"The inspector of the Central Branch from Tampico to San Luis Potosi, Francisco del Villar, made the following report to the Minister of Public Works, dated the 8th inst. In September good progress was made on the wooden aqueduct at kilometre 131; when finished, in this month, it will reach kilometre 139, near Villa de Valles, where the station will be located. The following amounts of work were done in the Guerrero Cañon: In the Montaña Division 6,978 cubic metres of solid rock, 3,393 of loose rock, 2,597 of work on earthworks, 215 of tunnel excavation. In the East Division 1.832 of solid rock, 1.631 of loose rock, 1,408 of earthworks, 1,500 of mountain work.

"The city of Durango, capital of the state of the same name, has been complimented by the Mexican Central Co. with a survey for branch to the city. The branch is but a short one, but is imperatively demanded by the deserving people and by the interested stockholders of the road."

Mexican Railroad Notes.—The Minister of Finance recently addressed the following order to the Director of the frontier custom-house at Paso del Norte: "I recommend to your especial attention that freight imported by the railroads and destined for any other point where a custom-house may be established, must not be delayed in its passage nor interrupted in its course, the duties of the custom-house in your charge being limited to closing and sealing box cars and tying and sealing separately each of the pieces on flat cars, as provided in the regulation of the law of March 25 last."

The Legislature of Yucatan has conceded a subsidy of $1,500 per kilometre to the narrow-gauge road from Merida to Sotuta.

Michigan & Ohio.—This company defaulted Nov. 1 on the coupons then due on its 6 per cent first mortgage bonds. The road extends from Dundee, Mich., to Allegan, 133 miles, and its trains use the Toledo, Ann Arbor & Grand Trunk tracks between Dundee and Toledo, O., 23 miles. The road was built last year by the same parties who built the Nickel-Plate line; it was through a country already very well provided with railroads, and almost everywhere comes into competition with older lines.

In relation to the default, Mr. F. A. Brown, Treasurer of the company, said: "The business for which the road was built was only reached six weeks since, arrangements for carrying lumber being then completed with the Chicago & West Michigan Railroad. It is understood that if the bondholders do not entertain a proposition to fund a year's coupons, which would give the road the necessary time to complete its business arrangements, a receiver will probably be applied for. Very few of the bonds are held by outside interests. There are about $2,630,000 of bonds outstanding, of which the original subscribers hold $2,600,000. The company's floating debt is $110,000, most of which is owing to the company's directors, and no stock has been issued. The company's capital consists of $2,500,000 preferred stock and $3,750,000 common. The issue of bonds has been $2,700,000, of which $70,000 are in the company's treasury."

Milwaukee, Lake Shore & Western.—The main line of this road is now completed to Bessemer in Ontonagon County, Mich., 35 miles west by north from Gogebic, and 345 miles from Milwaukee. Trains have begun to run through to the new terminus.

Miramichi Valley.—The St. John (N. B.) *Telegraph* says: "Mr. F. A. McInnes has charge of a party surveying the proposed change of route for this road at Stanley, York County. The season's work on the Miramichi Valley will consist of 50 miles of track laid and ready for traffic. Of these 30 miles will be on this end and 20 miles on the other. The eastern will extend up to Blackville, between which village and Chatham there will be regular railway communication this winter. This is the greatest showing ever made in railway construction in the province in one year."

Mobile & Girard.—The long projected extension of this road from Troy, Ala., to Elba is to be built, provided the right of way is given. Arrangements are now in progress to begin work.

Nashville, Chattanooga & St. Louis.—The McMinnville Branch is now completed to Sparta, Tenn., 7 miles northeast from the late terminus at Doyle, and 61 miles from the junction with the main line at Tullahoma. Trains have begun to run through to Sparta. The grading was completed some time ago, but work was suspended on account of the failure of White County to pay interest on its bonds issued in aid of the road. This matter has now been settled.

New York Central Sleeping Car Co.—A published statement says that the cars (Wagner sleeping and parlor) of this company are running in 16 states. The earnings for the past year were $1,591,486. The expenses were $884,355, leaving net earnings of $707,130. The operating cost of the year, exclusive of the depreciation of the cars and equipments, was 55.6 per cent. of the gross earnings.

New York, West Shore & Buffalo.—The second track between Utica and Syracuse, 47 miles, has been brought into use, so that the company has now a double track from Weehawken to Syracuse, 278 miles. The section from Syracuse to Buffalo, 148 miles, is still operated with a single track. The new track now brought into use has been laid some time, but several short sections were not ballasted until recently, when the Receivers had the work completed.

Northern Pacific.—This company's statement for September and the three months of the fiscal year from July 1 to Sept. 30 is as follows:

	September.		Three months.	
	1884.	1883.	1884.	1883.
Earnings	$1,236,560	$1,194,714	$3,291,600	$3,088,561
Expenses	666,707	734,493	1,868,427	2,020,318
Net earnings	$569.853	$460,221	$1,423,173	$1,068,243
Per c. of exps.	53.9	61.5	56.7	65 4

The three months show an increase in gross earnings of $203,039, or 6.5 per cent., with a decrease in expenses of $151,891, or 7.5 per cent, the result being a gain of $354,930, or 33.2 per cent., in net earnings.

Pearl River.—This road, the construction of which has been begun, is a narrow-gauge road intended especially to carry lumber, and will run from West Pearl, Miss., on the New Orleans & Northeastern road, to Pearlington, 27 miles. The principal owners are Messrs. Poitevant & Favre, of New Orleans, large lumber merchants.

Pennsylvania.—At the meeting held Nov. 3 the directors resolved to make the November dividend 3 per cent. in cash, no allotment of stock, or option to take the dividend in stock being given. This dividend, with that paid in May, will make 7 per cent. for the year. The payment is on $94,777,850 stock, so that it will require the sum of $2,843,336. The reduction from 4 to 3 per cent. had been generally anticipated, in view of the present condition of business.

Philadelphia & Reading.—Default was made Nov. 1 on the coupons then due on the Schuylkill Navigation improvement, boat and car loans. The Reading leases the company's property and guarantees the loans, of which about $1,603,000 are outstanding. The Receivers offer to buy the coupons at 5 per cent., asking the holders to give up the remaining 2 per cent.

Default was also made on the coupons due Nov. 1 on the Reading first series consolidated 5 per cent. bonds. Of these bonds it is stated that about $3,000,000 have been sold and some $5,000,000 more pledged as security for loans in various quarters. These defaults were generally expected.

The interest due Nov. 1 on New Jersey Central bonds was paid, contrary to previous reports. It is now said that the Receivers will not pay the Central dividend due next month, but this is doubtful, as their policy seems to be to retain the lease as long as possible.

Raleigh & Augusta Air Line.—The extension of this road southward from Hamlet, N. C., where it connects with the Carolina Central road, is now completed and opened for business to Gibson, S. C., 10 miles southward from Hamlet and 107 miles from Raleigh. Work is in progress beyond the new terminus.

Rochester & Pittsburgh.—Mr. Walston H. Brown, President of this company, has issued a circular in regard to the Forker committee. He says he is convinced that parties who signed the circular issued Oct. 21, 1884, have very small, if any, interest in Rochester & Pittsburgh securities. The parties whom Mr. Forker represents proposed last summer to reorganize the road, with preferred stock amounting to $15,000,000 to be sold at 20 cents on the dollar and common stock $5.000,000, the latter to be given for existing common stock. This committee has made several attempts to hinder reorganization as proposed, "If parties back of this committee should be successful in their endeavors, it would destroy the only chance we have of saving some interest in the property to present stockholders."

St. Louis & San Francisco.—General Passenger Agent Wishart issues the following circular, dated St. Louis, Nov. 1.:

"I take pleasure in announcing the completion of this company's line (Bolivar Branch), and opening of same for business to Bolivar, Polk County, Mo., 39 miles north from Springfield, Mo., with stations in the order, viz.: Willard, Asher, Buckley, Graydon, Wisbart, Tremont and Bolivar. In printing tickets but one coupon is required from St. Louis to either of the above named points, which should read *via* St. Louis & San Francisco Railway."

In St. Louis last week, this company applied to the Circuit Court for an order to restrain the Missouri Pacific Co. from depriving the plaintiff of the use of the tracks between Cabanne Avenue and the Union Depot in St. Louis and also the connection with its lines at Carondelet. The bill claimed that a lease of these tracks for 50 years was in existence. A temporary injunction was granted, but it is understood that since then the two companies have made an amicable arrangement which will probably end in the full settlement of the matter.

South Carolina Midland.—Notice of organization has been given by this company which proposes building a railroad from Charleston *via* Orangeburg, Columbia, Newbury and Laurens to Greenville, S. C. The projected line is through a country which barely supports the already existing roads, from which the new road could only secure business by active competition.

South Pennsylvania.—Work, it is said, has been suspended on this road at several points and it is reported that the suspension will be general all along the line. Where it has been stopped no definite time has been fixed for a resumption. Much of the work now under contract consists of tunnels and rock-cutting, with which the winter would not seriously interfere. Several reports are current in connection with this action, but none appear to be based upon anything more than conjecture.

Syracuse, Ontario & New York.—It is announced that from Nov. 1 this road will be operated independently of the New York, West Shore & Buffalo, although the company still owns a controlling interest; it has heretofore worked the road. The road extends from Syracuse, N. Y., to Earlville, 44 miles.

Tennessee & Ohio.—This company has been organized to build a road from Rogersville Junction, Tenn., on the East Tennessee, Virginia & Georgia road to Louisville, by way of Cumberland Gap. The incorporators are Messrs. H. M. Aiken, F. M. Fulkerson, L. L. Poats, Gen. R. N. Hood and William Aiken.

Texas Trunk.—Arrangements have been made to resume work on this road at once. The company must complete 10 miles more by Dec. 15, or else lose its charter. The road will probably be extended beyond this section to a connection with the Texas & St. Louis, near Athens.

Toledo, Marshall & Northern.—This company has been organized to build a railroad from Marshall, Mich., northward. The object is, apparently, to use the road-bed graded some years ago from Marshall north to Elm Hall.

Union Pacific.—This company's statement for September and the nine months ending Sept. 30 is as follows:

	September		Nine months.	
	1884.	1883	1884.	1883.
Earnings	$2,499,271	$2,881,639	$18,370,503	$20,819,738
Expenses	1,165,295	1,439,669	10,537,664	10,663,313
Net earnings	$1,333,976	$1,441,970	$7,832,839	$10,156,425
Per cent. of expenses	46.6	49.9	57.4	51.2

For the nine months the decrease in gross earnings was $2,449,235, or 11.8 per cent. The decrease in expenses was $125,649, or 1.2 per cent., leaving a decrease of $2,323,586, or 22.9 per cent., in net earnings.

Walden's Ridge.—This road is now in operation from Knoxville Junction, on the Cincinnati, New Orleans & Texas Pacific road, 80 miles north of Chattanooga, to Winter's Gap in Morgan County, Tenn., where there are coal mines. The present length of the road is 19 miles. Nine miles of this were built last year, of 3 ft. gauge. During the present year this section was changed from 3 ft. to 5 ft. gauge, and the additional 10 miles to Winter's Gap were built. The principal object of the company at the present time is to reach the large coal fields of the Cumberland Mountain, by way of Winter's Gap. The objective point is the city of Knoxville, about 24 miles beyond the present terminus. When completed the road will be part of a line from Nashville to Knoxville. It is now leased and operated by the Oakdale Iron, Coal & Transportation Co. as lessee.

Wisconsin, Minnesota & Pacific.—This road, which is practically an extension of the Pacific Division of the Minneapolis & St. Louis road, and which is built by that company and the Chicago, Rock Island & Pacific, is now completed to Watertown, Dak., 131 miles from its starting point at Norton, Minn., and 231 miles from Minneapolis. The stations on the new line, with their distances from Morton, are: Delhi, 20; Echo, 31; Wood Lake, 37; Hawley, 39; Hazel Run, 48; Clarkfield, 53; Boyd, 60; Dawson, 69; Madison, 78; Marinette, 89; Reville, 95; Wilson, 100; Troy, 113; Waverley, 119; Watertown, 131. The road was opened for business Nov. 1.

Worcester & Shrewsbury.—This short suburban road makes the following statement for the year ending Sept. 30

Earnings ($5,995 per mile)	$16 187
Expenses (80 per cent)	12 883
Net earnings ($1,224 per mile)	$3,304

Interest payments were $1,050, leaving a surplus of $2,254. The net income was nearly six times that of the preceding year. The company has $36,825 stock, $15,000 bonds and $3,343 floating debt. The road is of 3 ft. gauge, 2.7 miles long, and is used for passenger traffic only.

Wrightsville & Tennille.—Tracklaying is now in progress on this road, and although work has been somewhat delayed by difficulty in getting ties, some 10 miles of iron are reported down. The road is a branch of the Central Railroad, of Georgia, running from Tennille on that road southward to Wrightsville in Johnson County, Ga., a distance of about 20 miles.